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MEDICAL

INQUIRIES

AND

OBSERVATIONS.

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PREFACE.

THE candid reception of a small volume of Inquiries and Observations, published in the year 1788, has encouraged me to offer a second to the public, with the same title. Three of the inquiries were published several years ago; two * of them in pamphlets, and the third† in the second volume of the American Philosophical Transactions. They are now republished, in their present form, at the request of several of my friends, with the addition, chiefly, of a few notes.

I AM aware of the fate of every attempt to introduce new opinions into medicine. My apology for this attempt in some of the following essays is, that I believe the want of success in the treatment of those diseases which

* The inquiry into the influence of physical causes on the moral faculty, and the inquiry into the influence of spirituous liquors upon the human body, &c.

† The inquiry into the causes of the increase of bilious and intermitting fevers in Pennsylvania.

which are thought to be incurable, is occaſioned, in moſt caſes, by an attachment to ſuch theories as are imperfect or erroneous. I do not ſay, by a want of theory altogether, for it is impoſſible for a phyſician to preſcribe, without a theory of ſome kind. I believe further, after all that has been ſaid againſt theory, and in favour of ſimple obſervation in medicine, that uniform and complete ſucceſs can never be attained, but by combining with obſervation a perfect knowledge of all the cauſes of diſeaſes. Perhaps it would be equally juſt to aſſert, that obſervation will always be extenſive, accurate, and uſeful, in proportion as it is directed by principles in medicine.

I HAVE one more excuſe to offer for my temerity in propoſing the new opinions which are contained in the following inquiries, and that is, they were not ſought for, but obtruded upon me, and that too in ſpite of a conviction of the certain loſs of reputation which follows a change of opinion upon any ſubject; for I well knew the world was not diſpoſed to admit as a juſtification of this change, that

it

it is always the neceſſary effect of the diſcovery or adoption of new truths; and that ſtability in principles and practice, in an imperfect ſcience, is, for the moſt part, the effect of a timid or ſlothful perſeverance in ignorance or error.

In departing in ſome things from the ſyſtem of Dr. Cullen, in which I was educated, I do not relinquiſh the whole of his principles, much leſs do I reject indiſcriminately the ſyſtems of authors, whether ancient or modern, of leſs reputation. Truth in medicine, as far as it has been diſcovered, like truth in religion, appears to exiſt in greater or leſs proportions in different ſyſtems; but the fabric which ſhall include a knowledge of the cauſes and cure of every diſeaſe, remains yet to be completed, by an application to its unfiniſhed parts, of the ſucceſſive labors of Phyſicians in generations, or perhaps ages, yet to come.

Had I yielded to perſonal conſiderations, I ſhould have kept theſe papers a few years longer from the public eye, in order that they

might have become more correct from the influence which time alone exerts upon all literary performances; but I have preferred at every hazard, ſending them thus early into the world, from a deſire that my opinions and practice may be corrected, or ſupported, by the auxiliary obſervations and reaſonings of my medical brethren; and that ſeveral formidable diſeaſes may thereby be oppoſed, not by an individual only, but by the confederated exertions of men of different talents, and ſituations, in every part of the republic of medicine.

I HAD another reaſon for committing theſe Eſſays to the preſs, in their preſent immature ſtate, and that was, I have obſerved freedom in thinking, to be neceſſarily connected with freedom in communicating the reſult of inquiries after truth. I conſider this volume therefore, with all its imperfections, as a pledge of equal boldneſs, and I hope, of more ſucceſs, in all future inveſtigations.

PHILADELPHIA,
4th July, 1793.

AN

INQUIRY

INTO THE INFLUENCE OF PHYSICAL CAUSES UPON THE MORAL FACULTY,

DELIVERED BEFORE THE

AMERICAN PHILOSOPHICAL SOCIETY,

Held in Philadelphia, on the 27th of February, 1786.

GENTLEMEN,

IT was for the landable purpoſe of exciting a ſpirit of emulation and enquiry, among the members of our body, that the founders of our ſociety, inſtituted an annual oration. The taſk of preparing, and delivering this exerciſe, hath devolved, once more, upon me. I have ſubmitted to it, not becauſe I thought myſelf capable of fulfilling your intentions, but becauſe I wiſhed, by a teſtimony of my obedience to your requeſts, to atone for my long abſence from the temple of ſcience.

THE ſubject upon which I am to have the honor of addreſſing you this evening, is "An enquiry in-

" to the influence of phyſical cauſes upon the moral faculty."

By the moral faculty I mean a power in the human mind of diſtinguiſhing and chuſing good and evil, or in other words, virtue and vice. It is a native principle, and though it be capable of improvement by experience and reflection, it is not derived from either of them.——St. Paul, and Cicero, give us the moſt perfect account of it that is to be found in modern or ancient authors. " For " when the Gentiles, (ſays St. Paul) which have " not the law, do by nature the things contained " in the law, *theſe*, having not the law, are a *law* " unto themſelves ; which ſhew the works of the " law written in their hearts, their conſciences alſo " bearing witneſs, and their thoughts the mean " while accuſing, or elſe excuſing another."*

The words of Cicero are as follow—" Eſt igi- " tur hæc, judices, non ſcripta, ſed nata lex, quam " non didicimus, accepimus, legimus, verum ex na- " tura ipſa arripuimus, hauſimus, expreſſimus, ad " quam non docti, ſed facti, non inſtituti, ſed imbuti " ſumus."† This faculty is often confounded with ſcience, which is a diſtinct and independent power of the mind. This is evident from the paſſage quoted

* Rom i. 14. 15. † Oratio pro Milone.

quoted from the writings of St. Paul, in which conſcience is ſaid to be the witneſs that accuſes or excuſes us, of a breach of the law written in our hearts. The moral faculty is what the ſchoolmen call the "regula regulans,"—the conſcience is their "regula regulata." Or, to ſpeak in more modern terms, the moral faculty performs the office of a law-giver, while the buſineſs of conſcience is to perform the duty of a judge. The moral faculty is to the conſcience, what taſte is to the judgment, and ſenſation to perception. It is quick in its operations, and like the ſenſative plant, acts without reflection, while conſcience follows with deliberate ſteps, and meaſures all her actions, by the unerring ſquare of right and wrong. The moral faculty exerciſes itſelf upon the actions of others. It approves even in books, of the virtues of a Trajan, and diſapproves of the vices of a Marius, while conſcience confines its operations, only to its own actions. Theſe two powers of the mind are generally in an exact ratio to each other, but they ſometimes exiſt in different degrees in the ſame perſon. Hence we often find conſcience in its full vigor, with a diminiſhed tone, or total abſence of the moral faculty.

It has long been a queſtion among metaphyſicians, whether the conſcience be ſeated in the will or in the underſtanding. The controverſy can on-

ly be ſettled by admitting the will to be the ſeat of the moral faculty, and the underſtanding to be the ſeat of the conſcience. The myſterious nature of the union of thoſe two moral principles with the will and underſtanding, is a ſubject foreign to the buſineſs of the preſent enquiry.—

As I conſider virtue and vice to conſiſt in *action*, and not in opinion, and as this action has its ſeat in the *will*, and not in the conſcience, I ſhall confine my enquiries chiefly to the influence of phyſical cauſes upon that moral power of the mind, which is connected with volition, although many of theſe cauſes act likewiſe upon the conſcience, as I ſhall ſhew hereafter.—The ſtate of the moral faculty is viſible in actions, which affect the well-being of ſociety. The ſtate of the conſcience is inviſible, and therefore removed beyond our inveſtigation.

THE moral faculty has received different names from different authors. It is the "moral ſenſe" of Dr. Hutchiſon—the "ſympathy" of Dr. Adam Smith—the "moral inſtinct" of Rouſſeau—and "the light that lighteth every man that cometh into the world" of St John. I have adopted the term of moral faculty from Dr. Beattie, becauſe I conceive it conveys with the moſt perſpicuity, the idea

idea of a power in the mind, of chuſing good and evil.

Our books of medicine contain many records of the effects of phyſical cauſes upon the memory—the imagination—and the judgment. In ſome inſtances we behold their operation only on one,—in others on two,—and in many caſes upon the whole of theſe faculties. Their derangement has received different names, according to the number or nature of the faculties that are affected. The loſs of memory has been called "amneſia"—falſe judgement upon one ſubject has been called "melancholia"—falſe judgement upon all ſubjects has been called "mania"—and a defect of all the three intellectual faculties that have been mentioned, has received the name of "amentia." Perſons who labour under the derangement, or want of theſe powers of the mind, are conſidered, very properly, as ſubjects of medicine; and there are many caſes upon record that prove, that their diſeaſes have yielded to the healing art.

In order to illuſtrate the effects of phyſical cauſes upon the moral faculty, it will be neceſſary *firſt* to ſhew their effects upon the memory—the imagination and the judgment; and at the ſame time to point out the analogy between their operation

tion upon the intellectual powers of the mind, and the moral faculty.

1. Do we obſerve a connection between the intellectual powers, and the degrees of conſiſtency and firmneſs of the brain in infancy and childhood?—The ſame connection has been obſerved between the ſtrength as well as the progreſs of the moral faculty in children.

2. Do we obſerve a certain ſize of the brain, and a peculiar caſt of features, ſuch as the prominent eye, and the aquiline noſe, to be connected with extraordinary portions of genius?—We obſerve a ſimilar connection between the figure and temperament of the body, and certain moral faculties.—Hence, we often aſcribe good temper and benevolence to corpulency, and iraſcibility to ſanguineous habits. Cæſar thought himſelf ſafe in the friendſhip of the "ſleek-headed" Anthony and Dolabella; but was afraid to truſt to the profeſſions of the ſlender Caſſius.

3. Do we obſerve certain degrees of the intellectual faculties to be hereditary in certain families? The ſame obſervation has been frequently extended to moral qualities—Hence we often find certain virtues and vices as peculiar to families, through all their degrees of conſanguinity, and duration,

duration, as a peculiarity of voice---complexion---or ſhape.

4. Do we obſerve inſtances of a total want of memory---imagination---and judgment, either from an original defect in the ſtamina of the brain, or from the influence of phyſical cauſes?——The ſame unnatural defect is ſometimes obſerved, and probably from the ſame cauſes, of a moral faculty. The celebrated Servin whoſe character is drawn by the Duke of Sully in his Memoirs, appears to be an inſtance of the total abſence of the moral faculty, while the chaſm, produced by this defect, ſeems to have been filled up by a more than common extenſion of every other power of his mind. I beg leave to repeat the hiſtory of this prodigy of vice and knowledge.——"Let the reader re-
"preſent to himſelf a man of a genius ſo lively, and
"of an underſtanding ſo extenſive, as rendered him
"ſcarce ignorant of any thing that could be known
"—of ſo vaſt and ready a comprehenſion, that he
"immediately made himſelf maſter of whatever
"he attempted—and of ſo prodigious a memory,
"that he never forgot what he once learned. He
"poſſeſſed all parts of philoſophy, and the ma-
"thematics, particularly fortification and drawing.
"Even in theology he was ſo well ſkilled, that
"he was an excellent preacher, whenever he had

a mind

" a mind to exert that talent, and an able diſput-
" ant, for and againſt the reformed religion indif-
" ferently. He not only underſtood Greek---He-
" brew--- and all the languages which we call
" learned, but alſo all the different jargons, or
" modern dialects. He accented and pronounced
" them ſo naturally, and ſo perfectly imitated the
" geſtures and manners both of the ſeveral nations
" of Europe, and the particular provinces of
" France, that he might have been taken for a
" native of all, or any of theſe countries: and this
" quality he applied to counterfeit all ſorts of per-
" ſons, wherein he ſucceeded wonderfully. He
" was moreover the beſt comedian, and the greateſt
" droll that perhaps ever appeared. He had a ge-
" nius for poetry, and had wrote many verſes.
" He played upon almoſt all inſtruments---was a
" perfect maſter of muſic---and ſung moſt agree-
" ably and juſtly. He likewiſe could ſay maſs,
" for he was of a diſpoſition to do, as well as to
" know, all things. His body was perfectly well
" ſuited to his mind. He was light, nimble, and
" dexterous, and fit for all exerciſes. He could
" ride well, and in dancing, wreſtling, and leap-
" ing, he was admired. There are not any re-
" creative games that he did not know, and he
" was ſkilled in almoſt all mechanic arts.——But
" now for the reverſe of the medal. Here it ap-
" peared,

" peared, that he was treacherous---cruel---cow-
" ardly—deceitful—a liar---a cheat—a drunkard
" and a glutton—a ſharper in play—immerſed in
" every ſpecies of vice—a blaſphemer---an atheiſt.
" ——In a word, in him might be found all the
" the vices that are contrary to nature—honour—
" religion—and ſociety,—the truth of which he
" himſelf evinced with his lateſt breath; for he
" died in the flower of his age, in a common bro-
" thel, perfectly corrupted by his debaucheries,
" and expired with the glaſs in his hand, curſing,
" and denying God*."

It was probably a ſtate of the human mind ſuch as have been deſcribed, that our Saviour alluded to in the diſciple, who was about to betray him, when he called him " a devil. "Perhaps the eſſence of depravity in infernal ſpirits, conſiſts in their being wholly devoid of a moral faculty. In them the will has probably loſt the power of chuſing †, as well as the capacity of enjoying moral good. It is true, we read of their trembling in a belief of the exiſtence of a God, and of their anticipating future puniſhment by

* Vol. III. p. 216. 217.

† Milton ſeems to have been of this opinion. Hence, after aſcribing repentance to Satan, he makes him declare,

" Farewell remorſe: all good to me is loſt,
" *Evil*, be thou my *good*."————

PARADISE LOST, Book IV

by aſking, whether they were to be tormented before their time: But this is the effect of conſcience, and hence ariſes another argument in favour of this judicial power of the mind, being diſtinct from the moral faculty. It would ſeem as if the Supreme Being had preſerved the moral faculty in man from the ruins of his fall, on purpoſe to guide him back again to Paradiſe, and at the ſame time had conſtituted the conſcience, both in men and in fallen ſpirits, a kind of royalty in his moral empire, on purpoſe to ſhew his property in all intelligent creatures, and their original reſemblance to himſelf. Perhaps the eſſence of moral depravity in man conſiſts in a total, but temporary ſuſpenſion of the power of conſcience. Perſons in this ſituation are emphatically ſaid in the ſcriptures to be "paſt feeling"—and to have their conſciences ſeared, with a "hot iron"—they are likewiſe ſaid to be "twice dead"—that is, the ſame torpor or moral inſenſibility, has ſeized both the moral faculty and the conſcience.

5. Do we ever obſerve inſtances of the exiſtence of only *one* of the three intellectual powers of the mind that have been named, in the abſence of the other two? We obſerve ſomething of the ſame kind with reſpect to the moral faculty. I once knew a man, who diſcovered no one mark of rea-

ſon

ſon, who poſſeſſed the moral ſenſe or faculty in ſo high a degree, that he ſpent his whole life in acts of benevolence. He was not only inoffenſive, (which is not always the caſe with idiots) but he was kind and affectionate to every body. He had no ideas of time, but what were ſuggeſted to him by the returns of the ſtated periods for public worſhip, in which he appeared to take great delight. He ſpent ſeveral hours of every day in devotion, in which he was ſo careful to be private, that he was once found in the moſt improbable place in the world for that purpoſe, viz. in an oven.

6. Do we obſerve the memory, the imagination and the judgment, to be affected by diſeaſes, particularly by fevers and madneſs? Where is the phyſician, who has not ſeen the moral faculty affected from the ſame cauſes! How often do we ſee the temper wholly changed by a fit of ſickneſs! And now often do we hear perſons of the moſt delicate virtue, utter ſpeeches in the delirium of a fever, that are offenſive to decency, or good manners! I have heard a well atteſted hiſtory of a clergyman of the moſt exemplary moral character, who ſpent the laſt moments of a fever which deprived him both of his reaſon and his life, in profane curſing and ſwearing. I once attended a young woman in a nervous fever, who diſcovered after

after her recovery, a loſs of her former habit of veracity. Her memory (a defect of which, might be ſuſpected of being the cauſe of this vice) was in every reſpect as perfect as it was before the attack of the fever*. The inſtances of immorality in maniacs, who were formerly diſtinguiſhed for the oppoſite character, are ſo numerous, and well known, that it will not be neceſſary to ſelect any caſes, to eſtabliſh the truth of the propoſition contained under this head.

7. Do we obſerve any of the three intellectual powers that have been named, enlarged by diſeaſes? Patients in the delirium of a fever, often diſcover extraordinary flights of imagination, and madmen often aſtoniſh us with their wonderful acts of memory. The ſame enlargement, ſometimes, appears in the operations of the moral faculty. I have more than once heard the moſt ſublime diſcourſes on morality in the cell of an hoſpital, and who has not ſeen inſtances of patients in acute diſeaſes, diſcovering degrees of benevolence

* I have ſelected this caſe from many others, which have come under my notice, in which the moral faculty appeared to be impaired by diſeaſes, particularly by the typhus of Dr Cullen, and by thoſe ſpecies of palſy which affect the brain.

lence and integrity, that were not natural to them in the ordinary courſe of their lives?*

8. Do we ever obſerve a partial inſanity, or falſe perception on one ſubject, while the judgment is ſound and correct, upon all others? We perceive, in ſome inſtances, a ſimilar defect in the moral faculty. There are perſons who are moral in the higheſt degree, as to certain duties, who nevertheleſs live under the influence of ſome one vice. I knew an inſtance of a woman, who was exemplary in her obedience to every command of the moral law, except one. She could not refrain from ſtealing. What made this vice the more remarkable was, that ſhe was in eaſy circumſtances, and not addicted to extravagance in any thing. Such was her propenſity to this vice, that when ſhe could lay her hands upon nothing more valuable, ſhe would often, at the table of a friend, fill her pockets ſecretly with bread. As a proof that her judgment was not affected by this defect in her moral faculty, ſhe would both confeſs and lament her crime, when detected in it.

9. Do

* Xenophon makes Cyrus to declare, in his laſt moments, "That the ſoul of man at the hour of death appears *moſt* "*divine*, and then foreſees ſomething of future events."

9. Do we obſerve the imagination in many inſtances to be affected with apprehenſions of dangers that have no exiſtence? In like manner we obſerve the moral faculty to diſcover a ſenſibility to vice, that is by no means proportioned to its degrees of depravity. How often do we ſee perſons labouring under this morbid ſenſibility of the moral faculty, refuſe to give a direct anſwer to a plain queſtion, that related perhaps only to the weather, or to the hour of the day, leſt they ſhould wound the peace of their minds by telling a falſehood!

10. Do dreams affect the memory—the imagination—and the judgment? Dreams are nothing but incoherent ideas, occaſioned by partial or imperfect ſleep. There is a variety in the ſuſpenſion of the powers of the mind in this ſtate of the ſyſtem. In ſome caſes the imagination only is deranged in dreams—in others the memory is affected——and in others the judgment.——But there are caſes, in which the change that is produced in the ſtate of the brain, by means of ſleep, affects the moral faculty likewiſe; hence we ſometimes dream of doing and ſaying things when aſleep, which we ſhudder at, as ſoon as we awake. This ſuppoſed defection from virtue, exiſts frequently in dreams where the memory and judgment are

ſcarcely

ſcarcely impaired. It cannot therefore be aſcribed to the deſertion of thoſe two powers of the mind.

11. Do we read, in the accounts of travellers, of men, who in reſpect of intellectual capacity and enjoyments, are but a few degrees above brutes? We read likewiſe of a ſimilar degradation of our ſpecies, in reſpect to moral capacity and feeling. Here it will be neceſſary to remark, that the low degrees of moral perception, that have been diſcovered in certain African and Ruſſian tribes of men, no more invalidate our propoſition of the univerſal and eſſential exiſtence of a moral faculty in the human mind, than the low ſtate of their intellects prove, that reaſon is not natural to man. Their perceptions of good and evil are in an exact proportion to their intellectual powers. But I will go further, and admit with Mr. Locke*, that ſome ſavage nations are totally devoid of the moral faculty, yet it will by no means follow, that this was the original conſtitution of their minds. The appetite for certain aliments is uniform among all mankind. Where is the nation and the individual, in their primitive ſtate of health, to whom bread is not agreeable? But if we ſhould find ſavages, or indivi-

* Eſſay concerning the Human Underſtanding, Book I. Chap. III.

individuals, whose stomachs have been so disordered by intemperance, as to refuse this simple and wholesome article of diet, shall we assert, that this was the original constitution of their appetites?—By no means. As well might we assert, because savages destroy their beauty by painting and cutting their faces, that the principles of taste do not exist naturally in the human mind. It is with virtue as with fire. It exists in the mind, as fire does in certain bodies in a latent or quiescent state. As collision renders the one sensible, so education renders the other visible. It would be as absurd to maintain, because olives become agreeable to many people from habit, that we have no natural appetites for any other kind of food, as to assert that any part of the human species exist without a moral principle, because in some of them, it has wanted causes to excite it into action, or has been perverted by example. There are appetites that are wholly artificial. There are tastes so entirely vitiated, as to perceive beauty in deformity. There are torpid and unnatural passions. Why, under certain unfavourable circumstances, may there not exist also a moral faculty, in a state of sleep, or subject to mistakes?

The only apology I shall make, for presuming to differ from that justly-celebrated oracle, who first

unfolded to us a map of the intellectual world, ſhall be, that the eagle eye of genius often darts its views beyond the notice of facts, which are accommodated to the ſlender organs of perception of men, who poſſeſs no other talent than that of obſervation.

It is not ſurpriſing, that Mr. Locke has confounded this moral principle with *reaſon*, or that Lord Shaftſbury has confounded it with *taſte*, ſince all three of theſe faculties agree in the objects of their approbation, notwithſtanding they exiſt in the mind independent of each other. The favorable influence which the progreſs of ſcience and taſte has had upon the morals, can be aſcribed to nothing elſe, but to the perfect union that ſubſiſts in nature between the dictates of reaſon—of taſte—and of the moral faculty. Why has the ſpirit of humanity made ſuch rapid progreſs for ſome years paſt in the courts of Europe? It is becauſe kings and their miniſters have been taught to *reaſon* upon philoſophical ſubjects.—Why have indecency and profanity been baniſhed from the ſtage in London and Paris? It is becauſe immorality is an offence againſt the highly cultivated *taſte* of the French and Engliſh nations.

It muſt afford great pleaſure to the lovers of virtue, to behold the depth and extent of this

moral principle in the human mind. Happily for the human race, the intimations of duty and the road to happineſs are not left to the ſlow operations or doubtful inductions of reaſon, nor to the precarious deciſions of taſte! Hence we often find the moral faculty in a ſtate of vigor, in perſons in whom reaſon and taſte exiſt in a weak, or in an uncultivated ſtate. It is worthy of notice likewiſe, that while *ſecond* thoughts are beſt in matters of judgment, *firſt* thoughts are always to be preferred in matters that relate to morality. *Second* thoughts, in theſe caſes, are generally parlies between duty and corrupted inclinations. Hence Rouſſeau has juſtly ſaid, that "a well regulated moral inſtinct is the ſureſt guide to happineſs."

It muſt afford equal pleaſure to the lovers of virtue to behold, that our moral conduct and happineſs are not committed to the determination of a ſingle legiſlative power.——The conſcience, like a wiſe and faithful legiſlative council, performs the office of a check upon the moral faculty, and thus prevents the fatal conſequences of immoral actions.

An objection, I foreſee, will ariſe to the doctrine of the influence of phyſical cauſes upon the moral faculty, from its being ſuppoſed to favor the opinion

opinion of the *materiality* of the ſoul. But I do not ſee that this doctrine obliges us to decide upon the queſtion of the nature of the ſoul, any more than the facts which prove the influence of phyſical cauſes upon the memory—the imagination—or the judgment. I ſhall, however remark upon this ſubject, that the writers in favor of the *immortality* of the ſoul have done that truth great injury, by connecting it neceſſarily with its *immateriality*. The immortality of the ſoul depends upon the *will* of the Deity, and not upon the ſuppoſed properties of ſpirit. Matter is in its own nature as immortal as ſpirit. It is reſolveable by heat and mixture into a variety of forms; but it requires the ſame Almighty hand to annihilate it, that it did to create it. I know of no arguments to prove the immortality of the ſoul, but ſuch as are derived from the Chriſtian revelation*. It would be as reaſonable to aſſert, that the baſon of the ocean is immortal, from the greatneſs of its capacity to hold water; or that we are to live for ever in this world, becauſe we are afraid of dying, as to maintain the immortality of the ſoul, from the greatneſs of its capacity for knowledge and happineſs, or from its dread of annihilation.

* "Life and immortality *are* brought to light *only* through the goſpel."—2 Tim. i. 10.

I remarked in the beginning of this diſcourſe, that perſons who were deprived of the juſt exerciſe of memory—imagination—or judgment, were proper ſubjects of medicine; and that there are many caſes upon record which prove, that the diſeaſes from the derangement of theſe faculties, have yielded to the healing art.

It is perhaps only becauſe the diſorders of the moral faculty, have not been traced to a connection with phyſical cauſes, that medical writers have neglected to give them a place in their ſyſtems of noſology, and that ſo few attempts have been hitherto made, to leſſen or remove them by phyſical as well as rational and moral remedies.

I ſhall not attempt to derive any ſupport to my opinions, from the analogy of the influence of phyſical cauſes upon the temper and conduct of brute animals. The facts which I ſhall produce in favor of the action of theſe cauſes upon morals in the human ſpecies, will, I hope, render unneceſſary the arguments that might be drawn from that quarter.

I am aware, that in venturing upon this ſubject, I ſtep upon untrodden ground.——I feel as Æneas did, when he was about to enter the gates of Avernus, but without a Sibyl to inſtruct me in the myſteries

myſteries that are before me. I foreſee, that men who have been educated in the mechanical habits of adopting popular or eſtabliſhed opinions, will revolt at the doctrine I am about to deliver—while men of ſenſe and genius will hear my propoſitions with candor, and if they do not adopt them, will commend that boldneſs of enquiry, that prompted me to broach them.

I ſhall begin with an attempt to ſupply the defects of noſological writers, by naming the partial or weakened action of the moral faculty, MICRONOMIA. The total abſence of this faculty, I ſhall call ANOMIA. By the law, referred to in theſe new genera of veſaniæ, I mean the law of nature written in the human heart, and which I formerly quoted from the writings of St. Paul.

IN treating of the effects of phyſical cauſes upon the moral faculty, it might help to extend our ideas upon this ſubject, to reduce virtues and vices to certain ſpecies, and to point out the effects of particular ſpecies of virtue and vice; but this would lead us into a field too extenſive for the limits of the preſent enquiry. I ſhall only hint at a few caſes, and have no doubt but the ingenuity of my auditors will ſupply my ſilence, by applying the reſt.

It is immaterial, whether the phyſical cauſes that are to be enumerated, act upon the moral faculty through the medium of the ſenſes—the paſſions—the memory—or the imagination. Their influence is equally certain, whether they act as remote, pre-diſpoſing, or occaſional cauſes.

1. The effects of Climate upon the moral faculty claim our firſt attention. Not only individuals, but nations, derive a conſiderable part of their moral, as well as intellectual character, from the different portions they enjoy of the rays of the ſun. Iraſcibility—levity—timidity—and indolence, tempered with occaſional emotions of benevolence, are the moral qualities of the inhabitants of warm climates, while ſelfiſhneſs tempered with ſincerity and integrity, form the moral character of the inhabitants of cold countries.--- The ſtate of the weather, and the ſeaſons of the year alſo, have a viſible effect upon moral ſenſibility. The month of November, in Great Britain, rendered gloomy by conſtant fogs and rains, has been thought to favor the perpetration of the worſt ſpecies of murder, while the vernal ſun, in middle latitudes, has been as gene-

rally

rally remarked for producing gentleneſs and benevolence.

2. THE effects of DIET upon the moral faculty are more certain, though leſs attended to, than the effects of climate. "Fullneſs of bread," we are told, was one of the prediſpoſing cauſes of the vices of the cities of the plain. The faſts ſo often inculcated among the Jews, were intended to leſſen the incentives to vice; for pride—cruelty—and ſenſuality, are as much the natural conſequences of luxury, as apoplexies and palſies. But the *quality* as well as the quantity of aliment, has an influence upon morals; hence we find the moral diſeaſes that have been mentioned, are moſt frequently the offspring of animal food. The prophet Iſaiah ſeems to have been ſenſible of this, when he aſcribes ſuch ſalutary effects to a temperate and vegetable diet. "Butter and honey ſhall he eat," ſays he, "*that* he may know to refuſe the evil, and to chuſe the good."——But we have many facts which prove the efficacy of a vegetable diet upon the paſſions. Dr. Arbuthnot aſſures us, that he cured ſeveral patients of iraſcible tempers, by nothing but a preſcription of this ſimple and temperate regimen.

3. THE

3. The effects of certian Drinks upon the moral faculty are not leſs obſervable, than upon the intellectual powers of the mind. Fermented liquors of a good quality, and taken in a moderate quantity, are favorable to the virtues of candor, benevolence and generoſity; but when they are taken in exceſs, or when they are of a bad quality, and drank even in a moderate quantity, they ſeldom fail of rouſing every latent ſpark of vice into action. The laſt of theſe facts is ſo notorious, that when a man is obſerved to be ill-natured or quarrelſome in Portugal, after drinking, it is common in that country to ſay, that "he has drank bad wine." While occaſional fits of intoxication produce ill temper in many people, habitual drunkenneſs (which is generally produced by diſtilled ſpirits) never fails to eradicate veracity and integrity from the human mind. Perhaps this may be the reaſon why the Spaniards, in ancient times, never admitted a man's evidence in a court of juſtice, who had been convicted of drunkenneſs.——Water is the univerſal ſedative of turbulent paſſions—it not only promotes a general equanimity of temper, but it compoſes anger. I have heard ſeveral well-atteſted caſes, of a draught of cold water having ſuddenly compoſed this violent paſſion, after the uſual remedies of reaſon had been applied to no purpoſe.

4. Ex-

4. Extreme Hunger produces the moſt unfriendly effects upon moral ſenſibility. It is immaterial, whether it acts by inducing a relaxation of the ſolids, or an acrimony of the fluids, or by the combined operation of both thoſe phyſical cauſes. The Indians in this country whet their appetites for that ſavage ſpecies of war, which is peculiar to them, by the ſtimulus of hunger; hence, we are told, they always return meagre and emaciated from their military excurſions. In civilized life we often behold this ſenſation an overbalance for the reſtraints of moral feeling; and perhaps this may be the reaſon, why poverty, which is the moſt frequent parent of hunger, diſpoſes ſo generally to theft; for the character of hunger is taken from that vice—It belongs to it "to break through ſtone walls." So much does this ſenſation predominate over reaſon and moral feeling, that Cardinal de Retz ſuggeſts to politicians, never to riſk a motion in a popular aſſembly, however wiſe or juſt it may be, immediately before dinner.—That temper muſt be uncommonly guarded, which is not diſturbed by long abſtinence from food. One of the worthieſt men I ever knew, who made his breakfaſt his principal meal, was peeviſh and diſagreeable to his friends and family, from the time he left his bed, till he ſat down to his morning repaſt, after which, chearfulneſs ſparkled in his countenance,

countenance, and he became the delight of all around him.

5. I hinted formerly, in proving the analogy between the effects of DISEASES upon the intellects, and upon the moral faculty, that the latter was frequently impaired by fevers and madneſs. I beg leave to add further upon this head, that not only fevers and madneſs, but the hyſteria and hypochondriaſis, as well as all thoſe ſtates of the body, whether idiopathic or ſymptomatic, which are accompanied with preternatural irritability—ſenſibility—torpor---ſtupor---or mobility of the nervous ſyſtem, diſpoſe to vice, either of the body or of the mind. It is in vain to attack theſe vices with lectures upon morality. They are only to be cured by medicine,—particularly by exerciſe,—the cold bath,—and by a cold or warm atmoſphere. The young woman, whoſe caſe I mentioned formerly, that loſt her habit of veracity by a nervous fever, recovered this virtue, as ſoon as her ſyſtem recovered its natural tone, from the cold weather which happily ſucceeded her fever*.

6. IDLENESS

* There is a morbid ſtate of excitability in the body during the convaleſcence from fever, which is intimately connected with an undue propenſity to venereal pleaſures. I have met with ſeveral inſtances of it. The marriage of the celebrated

6. IDLENESS is the parent of every vice. It is mentioned in the Old Teſtament as another of the the prediſpoſing cauſes of the vices of the cities of the plain. LABOR of all kinds, favors and facilitates the practice of virtue. The country life is a happy life; chiefly, becauſe its laborious employments are favourable to virtue, and unfriendly to vice. It is a common practice, I have been told, for the planters in the Southern States, to conſign a houſe ſlave, who has become vicious from idleneſs, to the drudgery of the field, in order to reform him. The Bridewells and workhouſes of all civilized countries prove, that LABOR is not only a very

brated Mr. Howard to a woman who was twice as old as himſelf, and very ſickly, has been aſcribed by his biographer, Dr. Aiken, to *gratitude* for her great attention to him in a fit of ſickneſs. I am diſpoſed to aſcribe it to a ſudden paroxyſm of another paſſion, which as a religious man, he could not gratify in any other, than in a lawful way. I have heard of two young clergymen who married the women who had nurſed them in fits of ſickneſs. In both caſes there was great inequality in their years, and condition in life. Their motive was, probably, the ſame as that which I have attributed to Mr. Howard. Dr. Patrick Ruſſel takes notice of an uncommon degree of venereal excitability which followed attacks of the plague at Meſſina, in 1743, in all ranks of people.—Marriages, he ſays, were more frequent after it than uſual, and virgins were, in ſome inſtances violated, who died of that diſorder, by perſons who had juſt recovered from it.

a very ſevere, but the moſt benevolent of all puniſhments, in as much as it is one of the moſt ſuitable means of reformation. Mr Howard tells us in his Hiſtory of Priſons, that in Holland it is a common ſaying, "Make men work and you will make them honeſt." And over the raſp and ſpinhouſe at Grœningen, this ſentiment is expreſſed (he tells us) by a happy motto:

"Vitiorum ſemina—otium—labore exhauriendum."

The effects of ſteady labor in early life, in creating virtuous habits, is ſtill more remarkable. The late Anthony Benezet of this city, whoſe benevolence was the ſentinel of the virtue, as well as of the happineſs of his country, made it a conſtant rule in binding out poor children, to avoid putting them into wealthy families, but always preferred maſters for them who worked themſelves, and who obliged theſe children to work in their preſence. If the habits of virtue, contracted by means of this apprenticeſhip to labor, are purely mechanical, their effects are, nevertheleſs, the ſame upon the happineſs of ſociety, as if they flowed from principle. The mind, moreover, when preſerved by theſe means from weeds, becomes a more mellow ſoil afterwards, for moral and rational improvement.

7. The

7. THE effects of EXCESSIVE SLEEP are intimately connected with the effects of idleneſs upon the moral faculty,——hence we find that moderate, and even ſcanty portions of ſleep, in every part of the world, have been found to be friendly, not only to health and long life, but in many inſtances to morality. The practice of the Monks, who often ſleep upon a floor, and who generally riſe with the ſun, for the ſake of mortifying their ſenſual appetites, is certainly founded in wiſdom, and has often produced the moſt ſalutary moral effects.

8. THE effects of BODILY PAIN upon the moral, are not leſs remarkable than upon the intellectual powers of the mind. The late Dr Gregory, of the univerſity of Edinburgh, uſed to tell his pupils, that he always found his perceptions quicker in a fit of the gout, than at any other time. The pangs which attend the diſſolution of the body, are often accompanied with conceptions and expreſſions upon the moſt ordinary ſubjects, that diſcover an uncommon elevation of the intellectual powers. The effects of bodily pain are exactly the ſame in rouſing and directing the moral faculty. Bodily pain, we find, was one of the remedies employed in the Old Teſtament, for extirpating vice and promoting virtue: and Mr Howard tells us, that he ſaw it employed ſucceſsfully as a means

means of reformation, in one of the prisons which he visited. If pain has a physical tendency to cure vice, I submit it to the consideration of parents and legislators, whether moderate degrees of corporal punishments, inflicted for a great length of time, would not be more medicinal in their effects, than the violent degrees of them, which are of short duration.

9. Too much cannot be said in favour of CLEANLINESS, as a physical means of promoting virtue. The writings of Moses have been called by military men, the best "orderly book" in the world. In every part of them we find cleanliness inculcated with as much zeal, as if it was part of the moral, instead of the levitical law. Now, it is well-known, that the principal design of every precept and rite of the ceremonial parts of the Jewish religion, was to prevent vice, and to promote virtue. All writers upon the leprosy, take notice of its connection with a certain vice. To this disease gross animal food, particularly swine's flesh, and a dirty skin, have been thought to be predisposing causes---hence the reason, probably, why pork was forbidden, and why ablutions of the body and limbs were so frequently inculcated by the Jewish law. Sir John Pringle's remarks, in his Oration upon Captain Cook's Voyage, delivered

vered before the Royal Society in London, are very pertinent to this part of our ſubject.—— "Cleanlineſs (ſays he) is conducive to health, but "it is not ſo obvious, that it alſo tends to good or- "der and other virtues. Such (meaning the ſhip's "crew) as were made more cleanly, became more "ſober, more orderly, and more attentive to "duty." The benefit to be derived by parents and ſchoolmaſters from attending to theſe facts, is too obvious to be mentioned.

10. I hope I ſhall be excuſed in placing SOLITUDE among the phyſical cauſes which influence the moral faculty, when I add, that I confine its effects to perſons who are irreclaimable by rational or moral remedies. Mr Howard informs us, that the chaplain of the priſon at Liege in Germany aſſured him, "that the moſt refractory "and turbulent ſpirits, became tractable and ſub- "miſſive, by being cloſely confined for four or five "days."—In bodies that are prediſpoſed to vice, the ſtimulus of cheerful, but much more of profane ſociety and converſation, upon the animal ſpirits, becomes an exciting cauſe, and like the ſtroke of the flint upon the ſteel, renders the ſparks of vice both active and viſible. By removing men out of the reach of this exciting cauſe, they are often reformed, eſpecially if they are confined long enough

to produce a ſufficient chaſm in their habits of vice. Where the benefit of reflection, and inſtruction from books, can be added to ſolitude and confinement, their good effects are ſtill more certain. To this philoſophers and poets in every age have aſſented, by deſcribing the life of a hermit as a life of paſſive virtue.

11. CONNECTED with ſolitude, as a mechanical means of promoting virtue, SILENCE deſerves to be mentioned in this place. The late Dr Fothergill, in his plan of education for that benevolent inſtitution at Ackworth, which was the laſt care of his uſeful life, ſays every thing that can be ſaid in favour of this neceſſary diſcipline, in the following words. "To habituate children from their early "infancy, to ſilence a nd attention, is of the great-"eſt advantage to them, not only as a preparative "to their advancement in a religious life, but as "the groundwork of a well cultivated under-"ſtanding. To have the active minds of children "put under a kind of reſtraint—to be accuſtomed "to turn their attention from external objects, "and habituated to a degree of abſtracted quiet, "is a matter of great conſequence, and laſting be-"neſit to them. Although it cannot be ſuppoſed, "that young and active minds are always engaged "in ſilence as they ought to be, yet to be accuſ-

" tomed thus to quietneſs, is no ſmall point gained " towards fixing a habit of patience, and recollec- " tion, which ſeldom forſakes thoſe who have " been properly inſtructed in this entrance of the " ſchool of wiſdom, during the reſidue of their " days."

For the purpoſe of acquiring this branch of education, children cannot aſſociate too early, nor too often with their parents, or with their ſuperiors in age, rank, and wiſdom.

12. The effects of muſic upon the moral faculty, have been felt and recorded in every country. Hence we are able to diſcover the virtues and vices of different nations, by their tunes, as certainly as by their laws. The effects of muſic, when ſimply mechanical, upon the paſſions, are powerful and extenſive. But it remains yet to determine the degrees of moral ecſtaſy, that may be produced by an attack upon the ear, the reaſon, and the moral principle, at the ſame time, by the combined powers of muſic and eloquence.

13. The eloquence of the pulpit is nearly allied to muſic in its effects upon the moral faculty. It is true, there can be no permanent change in the temper, and moral conduct of a man, that is not derived from the underſtanding and the will; but

we muſt remember, that theſe two powers of the mind are moſt aſſailable, when they are attacked through the avenue of the paſſions; and theſe, we know, when agitated by the powers of eloquence, exert a mechanical action upon every power of the ſoul. Hence we find in every age and country, where chriſtianity has been propagated, the moſt accompliſhed orators have generally been the moſt ſucceſsful reformers of mankind. There muſt be a defect of eloquence in a preacher, who with the reſources for oratory, which are contained in the Old and New Teſtaments, does not produce in every man who hears him, at leaſt a temporary love of virtue. I grant that the eloquence of the pulpit alone, cannot change men into chriſtians, but it certainly poſſeſſes the power of changing brutes into men. Could the eloquence of the ſtage be properly directed, it is impoſſible to conceive the extent of its mechanical effects upon morals. The language and imagery of a Shakeſpeare, upon moral and religious ſubjects, poured upon the paſſions and the ſenſes, in all the beauty and variety of dramatic repreſentation! Who could reſiſt, or deſcribe their effects?

14. Odors of various kinds have been obſerved to act in the moſt ſenſible manner upon the moral faculty. Brydone tells us, upon the authority of a celebrated philoſopher in Italy, that the peculiar

liar wickedneſs of the people who live in the neighbourhood of Ætna and Veſuvius, is occaſioned chiefly by the ſmell of the ſulphur and of the hot exhalations which are conſtantly diſcharged from thoſe volcanos. Agreeable odors, ſeldom fail to inſpire ſerenity, and to compoſe the angry ſpirits—Hence the pleaſure, and one of the advantages of a flower garden. The ſmoke of tobacco is likewiſe of a compoſing nature, and tends not only to produce what is called a train in perception, but to huſh the agitated paſſions into ſilence and order—Hence the propriety of connecting the pipe or ſegar and the bottle together, in public company.

15. It will be ſufficient only to mention light and darkneſs, to ſuggeſt facts in favor of the influence of each of them upon moral ſenſibility. How often do the peeviſh complaints of the night in ſickneſs, give way to the compoſing rays of the light of the morning? Othello cannot murder Deſdemona by candle-light, and who has not felt the effects of a blazing fire, upon the gentle paſſions?

16. It is to be lamented, that no experiments have as yet been made, to determine the effects of all the different ſpecies of Airs, which chemiſtry has lately diſcovered, upon the moral faculty. I have authority, from actual experiments, only to declare, that Dephlogiſticated Air, when taken in-

to the lungs, produces cheerfulneſs, gentleneſs, and ſerenity of mind.

17. WHAT ſhall we ſay of the effects of Medicines upon the moral faculty? That many ſubſtances in the materia medica act upon the intellects, is well known to phyſicians. Why ſhould it be thought impoſſible for medicines, to act in like manner upon the moral faculty? May not the earth contain in its own bowels, or upon its ſurface, antidotes? But I will not blend facts with conjectures. Clouds and darkneſs ſtill hang upon this part of my ſubject.

LET it not be ſuſpected from any thing that I have delivered, that I ſuppoſe the influence of phyſical cauſes upon the moral faculty, renders the agency of divine influence unneceſſary to our moral happineſs. I only maintain, that the operations of the divine government are carried on in the moral, as in the natural world, by the inſtrumentality of ſecond cauſes. I have only trodden in the footſteps of the inſpired writers; for moſt of the phyſical cauſes I have enumerated, are connected with moral precepts, or have been uſed as the means of reformation from vice, in the Old and New Teſtaments. To the caſes that have been mentioned I ſhall only add, that Nebuchadnezzar was cured of his pride, by means of ſolitude

and

and a vegetable diet.—Saul was cured of his evil ſpirit, by means of David's harp, and St. Paul expreſsly ſays, "I keep my body under, and bring "it into ſubjection, leſt that by any means, when I "have preached to others, I myſelf ſhould be a "caſt-away." But I will go one ſtep further, and add in favor of divine influence upon the moral principle, that in thoſe extraordinary caſes, where bad men are ſuddenly reformed, without the inſtrumentality of phyſical, moral, or rational cauſes, I believe that the organization of thoſe parts of the body, which form the link that binds it to the ſoul, undergoes a phyſical change;* and hence the expreſſion of a "new creature," which is made uſe of in the ſcriptures to denote this change, is proper in a literal, as well as a figurative ſenſe. It is probably the beginning of that perfect renovation of the human body, which is predicted by St Paul in the following words—"For our converſation "is in heaven, from whence we look for the Savi-

"our,

* St. Paul was ſuddenly transformed from a perſecutor into a man of a gentle and amiable ſpirit. The manner in which this change was affected upon his mind, he tells us in the following words—"Neither circumciſion availeth "any thing, nor uncircumciſion, but a new creature.—"From henceforth let no man trouble me; for I bear in "*my body*, the *marks* of our Lord Jeſus." Galatians, vi. 15. 17.

" our, who ſhall change our vile bodies, that they " may be faſhioned according to his own glorious " body." I ſhall not pauſe to defend myſelf againſt the charge of enthuſiaſm in this place; for the age is at length arrived, ſo devoutly wiſhed for by Dr. Cheyne, in which men will not be deterred in their reſearches after truth, by the terror of odious or unpopular names.

I cannot help remarking under this head, that if the conditions of thoſe parts of the human body which are connected with the human ſoul, influence morals, the ſame reaſon may be given for a virtuous education, that has been admitted for teaching muſic and the pronunciation of foreign languages, in the early and yielding ſtate of thoſe organs, which form the voice and ſpeech. Such is the effect of a moral education, that we often ſee its fruits in advanced ſtages of life, after the religious principles which were connected with it, have been renounced; juſt as we perceive the ſame care in a ſurgeon in his attendance upon patients, after the ſympathy which firſt produced this care, has ceaſed to operate upon his mind. The boaſted morality of the Deiſts, is I believe, in moſt caſes, the offſpring of habits, produced originally by the principles and precepts of Chriſtianity. Hence appears the wiſdom of Solomon's advice—" Train up a " child

"child in the way he ſhould go, and when he is "old he will not," I had almoſt ſaid, he cannot "depart from it."

THUS have I enumerated the principal cauſes, which act mechanically upon morals. If from the combined action of phyſical powers that are oppoſed to each other, the moral faculty ſhould become ſtationary, or if the virtue or vice produced by them, ſhould form a neutral quality, compoſed of both of them, I hope it will not call in queſtion the truth of our general propoſitions. I have only mentioned the effects of phyſical cauſes in a ſimple ſtate.*

IT might help to enlarge our ideas upon this ſubject, to take notice of the influence of the different ſtages of ſociety, of agriculture and commerce, of ſoil and ſituation, of the different degrees of cultivation of taſte, and of the intellectual powers, of the different forms of government, and laſtly, of the different profeſſions and occupations of mankind, upon the moral faculty; but as theſe act indirectly

* The doctrine of the influence of phyſical cauſes on morals is happily calculated to beget charity towards the failings of our fellow creatures. Our duty to practiſe this, (it is true) is enforced by motives drawn from ſciences, as well as from the precepts of chriſtianity.

indirectly only, and by the intervention of causes that are unconnected with matter, I conceive they are foreign to the business of the present enquiry. If they should vary the action of the simple physical causes in any degree, I hope it will not call in question the truth of our general propositions, any more than the compound action of physical powers, that are opposed to each other. There remain only a few more causes which are of a compound nature, but so nearly related to those, which are purely mechanical, that I shall beg leave to trespass upon your patience, by giving them a place in my oration.

THE effects of imitation, habit and association upon morals, would furnish ample matter for investigation. Considering how much the shape, texture, and conditions of the human body, influence morals, I submit it to the consideration of the ingenious, whether in our endeavours to imitate moral examples, some advantage may not be derived, from our copying the features and external manners of the originals. What makes the success of this experiment probable is, that we generally find men, whose faces resemble each other, have the same manners and dispositions. I infer the possibility of success in an attempt to imitate originals in a manner that has been mentioned, from the facility with which domestics acquire a resemblance

reſemblance to their maſters and miſtreſſes, not only in manners, but in countenance, in thoſe caſes where they are tied to them, by reſpect, and affection.—Huſbands and wives alſo where they poſſeſs the ſame ſpecies of face, under circumſtances of mutual attachment, often acquire a reſemblance to each other.

From the general deteſtation in which hypocriſy is held both by good and bad men, the mechanical effects of habit upon virtue, have not been ſufficiently explored. There are, I am perſuaded, many inſtances where virtues have been aſſumed by accident, or neceſſity, which have become real from habit, and afterwards derived their nouriſhment from the heart. Hence the propriety of Hamlet's advice to his mother—

" Aſſume a virtue, if you have it not,
" That monſter, cuſtom, who all ſenſe doth eat,
" Of habits evil, is angel, yet in this,
" That to the uſe of actions fair and good,
" He likewiſe gives a frock or livery,
" That aptly is put on—Refrain to-night,
" And that ſhall lend a kind of eaſineſs,
" To the next abſtine ce ; the next more eaſy,
" For uſe can almoſt change the ſtamp of na-
" ture,

" And

" And master even the devil, or throw him out,
" With wondrous potency."

THE influence of ASSOCIATION upon morals, opens an ample field for enquiry. It is from this principle, that we explain the reformation from theft and drunkenness in servants which we sometimes see produced by a draught of spirits in which tartar emetic had been secretly dissolved. The recollection of the pain and sickness excited by the emetic, naturally associates itself with the spirits, so as to render them both equally the objects of aversion. It is by calling in this principle only, that we can account for the conduct of Moses, in grinding the golden calf into a powder, and afterwards dissolving it (probably by means of hepar sulphuris) in water, and compelling the children of Israel to drink of it, as a punishment for their idolatry. This mixture is bitter and nauseating in the highest degree. An inclination to idolatry, therefore, could not be felt without being associated with the remembrance of this disagreeable mixture, and of course being rejected, with equal abhorrence. The benefit of corporal punishments, when they are of a short duration, depends in part up their being connected by time and place, with the crimes for which they are inflicted. Quick as the thunder follows the light-

ning

ning, if it were poſſible, ſhould puniſhments follow the crimes, and the advantage of aſſociation would be more certain, if the ſpot where they were committed, were made the theatre of their expiation. It is from the effects of this aſſociation, probably, that the change of place and company produced by exile and tranſportation, has ſo often reclaimed bad men, after moral—rational—and phyſical means of reformation had been uſed to no purpoſe.

As SENSIBILITY is the avenue to the moral faculty, every thing which tends to diminiſh it tends alſo to injure morals.——The Romans owed much of their corruption to the ſights of the conteſts of their gladiators, and of criminals, with wild beaſts. For theſe reaſons, executions ſhould never be public. Indeed, I believe there are no public puniſhments of any kind, that do not harden the hearts of ſpectators, and thereby leſſen the natural horror which all crimes at firſt excite in the human mind.

CRUELTY to brute animals is another means of deſtroying moral ſenſibility. The ferocity of ſavages has been aſcribed in part to their peculiar mode of ſubſiſtence. Mr. Hogarth points out in his ingenious prints, the connection between cruelty to brute animals in youth, and murder in manhood.

hood. The Emperor Domitian prepared his mind by the amuſement of killing flies, for all thoſe bloody crimes which afterwards diſgraced his reign. I am ſo perfectly ſatisfied of the truth of a a connection between morals, and humanity to brutes, that I ſhall find it difficult to reſtrain my idolatry for that legiſlature, that ſhall firſt eſtabliſh a ſyſtem of laws, to defend them from outrage and oppreſſion.

In order to preſerve the vigor of the moral faculty, it is of the utmoſt conſequence to keep young people as ignorant as poſſible of thoſe crimes, that are generally thought moſt diſgraceful to human nature. Suicide, I believe, is often propagated by means of news-papers. For this reaſon, I ſhould be glad to ſee the proceedings of our courts kept from the public eye, when they expoſe, or puniſh monſtrous vices.

The laſt mechanical method of promoting morality that I ſhall mention, is to keep ſenſibility alive, by a familiarity with ſcenes of diſtreſs from poverty and diſeaſe. Compaſſion never awakens in the human boſom, without being accompanied by a train of ſiſter virtues—hence the wiſe man juſtly remarks, that "By the ſadneſs of the countenance, the heart is made better."

A late French writer in his prediction of events that are to happen in the year 4000, ſays "That "mankind in that æra ſhall be ſo far improved by "religion and government, that the ſick and the "dying, ſhall no longer be thrown together with "the dead, into ſplendid houſes, but ſhall be re-"lieved and protected in a connection with their "families and ſociety." For the honor of humanity, an inſtitution * deſtined for that diſtant period, has lately been founded in this city, that ſhall perpetuate the year 1786 in the hiſtory of Pennſylvania. Here the feeling heart—the tearful eye—and the charitable hand, may always be connected together, and the flame of ſympathy, inſtead of being extinguiſhed in taxes, or expiring in a ſolitary blaze by a ſingle contribution, may be kept alive, by conſtant exerciſe. There is a neceſſary connection between animal ſympathy and good morals. The prieſt and the levite, in the New Teſtament, would probably have relieved the poor man who fell among thieves, had accident brought them near enough to his wounds. The unfortunate Mrs. Bellamy was reſcued from the dreadful purpoſe of drowning herſelf, by nothing but the diſtreſs of a child, rending the air with its cries for bread

* A Public Diſpenſary.

bread. It is probably owing in ſome meaſure to the connection between good morals and ſympathy that the fair ſex in every age, and country, have been more diſtinguiſhed for virtue, than men—for how ſeldom do we hear of a woman, devoid of humanity?———

Lastly, Attraction, Compoſition, and Decompoſition, belong to the paſſions as well as to matter. Vices of the ſame ſpecies attract each other with the moſt force—hence the bad conſequences of crouding young men (whoſe propenſities are generally the ſame) under one roof, in our modern plans of education. The effects of compoſition and decompoſition upon vices, appear in the meanneſs of the ſchool-boy, being often cured by the prodigality of a military life, and by the precipitation, of avarice, which is often produced by ambition and love.*

If

* A citizen of Philadelphia had made many unſucceſsful attempts to cure his wife of drinking ardent ſpirits. At length, deſpairing of her reformation, he purchaſed a hogſhead of rum, and after tapping it, left the key in the door where he had placed it as if he had forgotten it. His deſign was to give her an opportunity of deſtroying herſelf, by drinking as much as ſhe pleaſed. The woman ſuſpected this to be his deſign—and ſuddenly left off drinking. Anger here became the antidote of intemperance.

If phyſical cauſes influence morals in the manner we have deſcribed, may they not alſo influence religious principles and opinions?—I anſwer in the affirmative; and I have authority, from the records of phyſic, as well as from my own obſervations, to declare, that religious melancholy and madneſs, in all their variety of ſpecies, yield with more facility to medicine, than ſimply to polemical diſcourſes, or to caſuiſtical advice.—But this ſubject is foreign to the buſineſs of the preſent enquiry.

From a review of our ſubject, we are led to contemplate with admiration, the curious ſtructure of the human mind. How diſtinct are the number, and yet how united! How ſubordinate and yet how coequal are all its powers! How wonderful is the action of the ſoul upon the body! Of the body upon the ſoul!—And of the divine ſpirit upon both! What a myſtery is the mind of man to itſelf!———O! nature!———Or to ſpeak more properly,———O! thou God of Nature!———In vain do we attempt to ſcan thy immenſity, or to comprehend thy various modes of exiſtence, when a ſingle particle of light iſſued from thyself, and kindled into intelligence in the boſom of man, thus dazzles and confounds our underſtandings!———

THE extent of the moral powers and habits in man is unknown. It is not improbable, but the human mind contains principles of virtue, which have never yet been excited into action. We behold with ſurpriſe the verſatility of the human body in the exploits of tumblers and rope-dancers. Even the agility of a wild beaſt has been demonſtrated in a girl in France, and an amphibious nature has been diſcovered in the human ſpecies, in a young man in Spain. We liſten with aſtoniſhment to the accounts of the *memoirs* of Mithridates, Cyrus, and Servin. We feel a veneration bordering upon divine homage, in contemplating the ſtupendous *underſtandings* of Lord Verulam and Sir Iſaac Newton; and our eyes grow dim, in attempting to purſue Shakeſpeare and Milton in their immeaſurable flights of *imagination*. And if the hiſtory of mankind does not furniſh ſimilar inſtances of the verſatility and perfection of our ſpecies in virtue, it is becauſe the moral faculty has been the ſubject of leſs culture and fewer experiments than the body, and the intellectual powers of the mind. From what has been ſaid, the reaſon of this is obvious. Hitherto the cultivation of the moral faculty has been the buſineſs of parents, ſchoolmaſters and divines*. But if the

* The people commonly called Quakers and the Methodiſts,

principles, we have laid down, be juſt, the improvement and extenſion of this principle ſhould be equally the buſineſs of the legiſlator---the natural philoſopher---and the phyſician; and a phyſical regimen ſhould as neceſſarily accompany a moral precept, as directions with reſpect to the air---exerciſe---and diet, generally accompany preſcriptions for the conſumption, and the gout. To encourage us to undertake experiments for the improvement of morals, let us recollect the ſucceſs of philoſophy in leſſening the number, and mitigating the violence of incurable diſeaſes. The intermitting fever, which proved fatal to two of the monarchs of Britain, is now under abſolute ſubjection to medicine. Continual fevers are much leſs fatal than formerly. The ſmall-pox is diſarmed of its mortality by inoculation, and even the tetanus and the cancer have lately received a check in their ravages upon man-

diſts, make uſe of the greateſt number of phyſical remedies in their religious and moral diſcipline, of any ſects of Chriſtians—and hence we find them every where diſtinguiſhed for their good morals. There are ſeveral excellent *phyſical* inſtitutions in other churches; and if they do not produce the ſame moral effects, that we obſerve from phyſical inſtitutions among thoſe two modern ſects, it muſt be aſcribed to their being more neglected by the members of thoſe churches.

VERSITY OF MARYLAND
LIBRARY
SCHOOL OF MEDICINE

kind. But medicine has done more—It has penetrated the deep and gloomy abyſs of death, and acquired freſh honours in his cold embraces.———Witneſs the many hundred people who have lately been brought back to life, by the ſucceſsful efforts of the humane ſocieties, which are now eſtabliſhed in many parts of Europe, and in ſome parts of America. Should the ſame induſtry and ingenuity, which have produced theſe triumphs of medicine over diſeaſes and death, be applied to the moral ſcience, it is highly probable, that moſt of thoſe baneful vices, which deform the the human breaſt, and convulſe the nations of the earth, might be baniſhed from the world. I am not ſo ſanguine as to ſuppoſe, that it is poſſible for man to acquire ſo much perfection from ſcience, religion, liberty and good government, as to ceaſe to be mortal; but I am fully perſuaded, that from the combined action of cauſes, which operate at once upon the reaſon, the moral faculty, the paſſions, the ſenſes, the brain, the nerves, the blood and the heart, it is poſſible to produce ſuch a change in his moral character, as ſhall raiſe him to a reſemblance of angels—nay more, to the likeneſs of GOD himſelf. ——The State of Pennſylvania ſtill deplores the loſs of a man, in whom not only reaſon and revelation,

lation, but many of the phyſical cauſes that have been enumerated, concurred to produce ſuch attainments in moral excellency, as have ſeldom appeared in a human being. This amiable citizen, conſidered his fellow creature, man, as God's extract, from his own works; and whether this image of himſelf, was cut out from ebony or copper---whether he ſpoke his own, or a foreign language---or whether he worſhipped his Maker with ceremonies, or without them, he ſtill conſidered him as a brother, and equally the object of his benevolence. Poets and hiſtorians, who are to live hereafter, to you I commit his panegyric; and when you hear of a law for aboliſhing ſlavery in each of the American States, ſuch as was paſſed in Pennſylvania, in the year 1780—when you hear of the kings and queens of Europe, publiſhing edicts for aboliſhing the trade in human ſouls —and laſtly, when you hear of ſchools and churches with all the arts of civilized life, being eſtabliſhed among the nations of Africa, then remember and record, that this revolution in favour of human happineſs, was the effect of the labours—the publications—the private letters—and the prayers of ANTHONY BENEZET*.—

* This worthy man was deſcended from an ancient and honourable

I RETURN from this digreſſion, to addreſs myſelf in a particular manner to you, VENERABLE SAGES and FELLOW CITIZENS in the REPUBLIC OF LETTERS.—The influence of philoſophy, we have been told, has already been felt in courts. To increaſe, and complete this influence, there is nothing more neceſſary, than for the numerous literary

honourable family that flouriſhed in the court of Lewis the XIV. With liberal proſpects in life, he early devoted himſelf to teaching an Engliſh ſchool; in which, for induſtry, capacity and attention to the morals and principles of the youth committed to his care, he was without an equal. He publiſhed many excellent tracts againſt the African trade, againſt war, and the uſe of ſpirituous liquors, and one in favour of civilizing and chriſtianiſing the Indians. He wrote to the queen of Great Britain, and the queen of Portugal, to uſe their influence in their reſpective courts to aboliſh the African trade. He alſo wrote an affectionate letter to the king of Pruſſia, to diſuade him from making war. The hiſtory of his life affords a remarkable inſtance how much it is poſſible for an individual to accompliſh in the world; and that the moſt humble ſtations do not preclude good men from the moſt extenſive uſefulneſs. He bequeathed his eſtate (after the death of his widow) to the ſupport of a ſchool for the education of negro children, which he had founded and taught for ſeveral years before he died. He departed this life in May 1784, in the 71ſt year of his age, in the meridian of his uſefulneſs, univerſally lamented by perſons of all ranks and denominations.

literary ſocieties in Europe and America, to add the SCIENCE of MORALS to their experiments and enquiries. The godlike ſcheme of Henry the IV. of France, and of the illuſtrious Queen Elizabeth of England, for eſtabliſhing a perpetual peace in Europe, may be accompliſhed without a ſyſtem of juriſprudence, by a confederation of learned men, and learned ſocieties. It is in their power, by multiplying the objects of human reaſon, to bring the monarchs and rulers of the world, under their ſubjection, and thereby to extirpate war—ſlavery—and capital puniſhments, from the liſt of human evils. Let it not be ſuſpected that I detract by this declaration, from the honour of the chriſtian religion. It is true—Chriſtianity was propagated without the aid of human learning; but this was one of thoſe miracles, which was neceſſary to eſtabliſh it, and which, by repetition, would ceaſe to be a miracle. They miſrepreſent the chriſtian religion, who ſuppoſe it to be wholly an internal revelation, and addreſſed only to the moral powers of the mind. The truths of Chriſtianity afford the greateſt ſcope for the human underſtanding, and they will become intelligible to us, only in proportion as the human genius is ſtretched by means of philoſophy, to its utmoſt dimenſions. Errors may be oppoſed to errors; but truths, upon all ſubjects,

mutually

mutually ſupport each other. And perhaps one reaſon, why ſome parts of the Chriſtian revelation are ſtill involved in obſcurity, may be occaſioned by our imperfect knowledge of the phænomena, and laws of nature. The truths of philoſophy and Chriſtianity, dwell alike in the mind of the Deity, and reaſon and religion are equally the offspring of his goodneſs. They muſt, therefore, ſtand and fall together. By reaſon, in the preſent inſtance, I mean the power of judging of truth, as well as the power of comprehending it. Happy æra!—When the divine and the philoſopher ſhall embrace each other, and unite their labors, for the reformation and happineſs of mankind!——

ILLUSTRIOUS COUNCILLORS and SENATORS of Pennſylvania! * I anticipate your candid reception of this feeble effort to increaſe the quantity of virtue in our republic. It is not my buſineſs to remind you of the immenſe reſources for greatneſs, which nature and Providence have beſtowed upon our ſtate. Every advantage which France has derived from being placed in the centre of

* His excellency the preſident, and ſupreme executive council, and the members of the general aſſembly of Pennſylvania, attended the delivery of the oration, in the hall of the univerſity, by invitation from the philoſophical ſociety.

of Europe, and which Britain has derived from her mixture of nations, Pennſylvania has opened to her. But my buſineſs at preſent, is to ſuggeſt the means of promoting the happineſs, not the greatneſs the ſtate. For this purpoſe, it is abſolutely neceſſary that our government, which unites into one all the minds of the ſtate, ſhould poſſeſs, in an eminent degree, not only the underſtanding, the paſſions, and the will, but above all, the moral faculty, and the conſcience of an individual.—Nothing can be politically right, that is morally wrong; and no neceſſity can ever ſanctify a law, that is contrary to equity. VIRTUE is the ſoul of a republic. To promote this, laws for the ſuppreſſion of vice and immorality will be as ineffectual, as the increaſe and enlargement of gaols. There is but one method of preventing crimes, and of rendering a republican form of government durable, and that is by diffeminating the ſeeds of virtue and knowledge through every part of the ſtate, by means of proper modes and places of education, and this can be done effectually only, by the interference and aid of the legiſlature. I am ſo deeply impreſſed with the truth of this opinion, that were this evening to be the laſt of my life, I would not only ſay to the aſylum of my anceſtors, and my beloved native country, with the

patriot

patriot of Venice, "Eſto perpetua"—But I would add, as the laſt proof of my affection for her, my parting advice to the guardians of her liberties, "To eſtabliſh and ſupport PUBLIC SCHOOLS in every part of the ſtate."

AN

INQUIRY

INTO THE

EFFECTS of SPIRITUOUS LIQUORS

UPON THE

HUMAN BODY,

And their INFLUENCE upon the

HAPPINESS OF SOCIETY.

AN

INQUIRY, &c.

BY Spirits I mean all thoſe liquors which are obtained by diſtillation from fermented juices or ſubſtances of any kind. Theſe liquors were formerly uſed only in medicine---They now conſtitute a principal part of the drinks of many countries.

SINCE the introduction of ſpirituous liquors into ſuch general uſe, phyſicians have remarked that a number of new diſeaſes have appeared among us,

us, and have described many new symptoms as common to old diseases. Spirits in their first operation are stimulating upon the system. They quicken the circulation of the blood, and produce some heat in the body. Soon afterwards, they become what is called sedative; that is, they diminish the action of the vital powers, and thereby produce languor and weakness.

The effects of spirituous liquors upon the human body, are sometimes slow in their appearance. A strong constitution, especially if it be assisted with constant and hard labour, will counteract the destructive effects of spirits for many years, but in general they produce the following diseases:

1. *A sickness at the stomach*, and *vomiting* in the morning. This disorder is generally accompanied by a want of appetite for breakfast. It is known by tremors in the hands, insomuch that persons who labour under it, are hardly able to lift a tea cup to their heads, till they have taken a dose of some cordial liquor. In this disorder, a peculiar paleness, with small red streaks, appear in the cheeks. The flesh of the face, at the same time, has a peculiar fulness and flabbiness, which are very different from sound and healthy fat.

2. An

2. An *univerſal dropſy*. This diſorder begins firſt in the lower limbs, and gradually extends itſelf throughout the whole body. I have been told that the merchants in Charleſton, South-Carolina, never truſt the planters when ſpirits have produced the firſt ſymptom of this diſorder upon them. It is very natural to ſuppoſe that induſtry and virtue have become extinct in that man, whoſe legs and feet are ſwelled, from the uſe of ſpirituous liquors.

3. *Obſtruction of the liver*. This diſorder produces other diſeaſes, ſuch as an inflammation, which ſometimes proves ſuddenly fatal--the jaundice---and a dropſy in the belly.

4. *Diabetes*.

5. *Pains in the limbs*, accompanied by a ſenſe of burning in the palms of the hands and ſoles of the feet. This diſeaſe has ſometimes been called the Jamaica Rheumatiſm.

6. *Hoarſeneſs and cough*. Theſe complaints prediſpoſe to fatal attacks of Pneumonia Notha.

7. The *Epilepſy*. 8. *Madneſs*. 9. *Palſy*, and, 10. The *Apoplexy*, complete the group of diſeaſes produced by ſpirituous liquors.*

* It has been remarked that thoſe drunkards in whom a fit

I do not aſſert that theſe diſorders are never produced by any other cauſes, but I maintain that ſpirituous liquors are the moſt frequent cauſes of them, and that when a prediſpoſition to them is produced by other cauſes, they are rendered more certain and more dangerous by the intemperate uſe of ſpirits.

I have only named a few of the principal diſorders which are produced by ſpirituous liquors. It would take up a volume to deſcribe how much other diſorders natural to the human body, are increaſed and complicated by them. Every ſpecies of inflammatory and putrid fever, is rendered more frequent and more dangerous by the uſe of ſpirituous liquors.

THE danger to life from the diſeaſes which have been mentioned is well known. I do not think it extravagant therefore to repeat here, what has been often ſaid, that ſpirituous liquors deſtroy more lives than the ſword. War has its intervals of deſtruction---but ſpirits operate at all times and ſeaſons upon human life. The ravages of war are

 confined

fit of intoxication is terminated by ſleep and ſtupor, die of palſy, gout, and gravel; while thoſe in whom it terminates by copious ſweats, vomitings or ſtools, or by a diſcharge of pale urine, periſh by diabetes and dropſy.

confined to but one part of the human ſpecies, *viz.* to men; but ſpirits act too often upon perſons who are exempted from the dangers of war by age or ſex; and laſtly, war deſtroys only thoſe perſons who allow the uſe of arms to be lawful, whereas ſpirits inſinuate their fatal effects among people, whoſe principles are oppoſed to the effuſion of human blood.

But the effects of ardent ſpirits upon the human body, do not end in the deſtruction of life. They derange and even deform a *dead* body ſo as to render it a loathſome addition to the clay which conceals it from human view after death. This has been frequently demonſtrated in the diſſection of perſons who have been deſtroyed by the uſe of ardent ſpirits. They harden and contract the fibres of the ſtomach and bowels, or induce in them abſceſſes and gangrene—they produce ſchirri in the viſcera—they contract the diameter of the ſanguiferous and bronchial veſſels—they induce oſſifications in the tendons, arteries, and pleura, and laſtly—they produce a peculiar criſpneſs in the hair of the head, inſomuch that the wig-makers in London give much leſs for it, than for the hair of ſober people.

If we advance a ſtep further and examine the effects of ſpirituous liquors upon the *mind*, the proſpect will be ſtill more diſtreſſing and terrible. Their firſt effects here, ſhew themſelves in the *temper*. I have conſtantly obſerved men who are intoxicated in any degree with ſpirits, to be peeviſh and quarrelſome; after a while they loſe by degrees the *moral* ſenſe. They violate promiſes and engagements without ſhame or remorſe. From theſe deficiencies in veracity and integrity, they paſs on to crimes of a more heinous nature. It would diſhonour human nature only to name them.

The next operation of ardent ſpirits is upon the *underſtanding*. This ſublime power of the mind is firſt *debilitated* in hard drinkers.—They diſcover a torpor in every mental exertion, even when they are not under the immediate influence of ſpirits. To this debility in the underſtanding ſucceed the loſs of *memory*, and the *perverſion* of all the intellectual powers in *melancholy* and *madneſs*, and in ſome caſes the total *extinction* of them in *idiotiſm*.

Let us next turn our eyes from the effects of ſpirits upon the body and mind, to their effects upon *property*; and here freſh ſcenes of miſery open to our view. Among the inhabitants of cities, they pro-

duce debts, disgrace, and bankruptcy. Among farmers, they produce idleness with its usual consequences, such as houses without windows, barns without roofs, gardens without enclosures, fields without fences, hogs without yokes, sheep without wool, meagre cattle, feeble horses, and half clad dirty children, without principles, morals, or manners. This picture is not exaggerated. I appeal to the observations of my countrymen, whether such scenes of wretchedness do not follow the tracks of spirituous liquors, in every part of the United States.

THUS have I in a few words pointed out the effects of spirituous liquors upon the bodies, minds, and estates of my fellow-citizens.—Their mischiefs may be summed up in a few words. They fill our church-yards with premature graves, they deface the image of God in the soul, they derange or destroy the intellectual powers, they fill the sheriff's docket with executions, they croud our hospitals with patients, and our jails with criminals, they lead to places of public ignomy and punishment, and lastly, they people the regions—but it belongs to another profession to shew their terrible consequences in the future world.

AFTER this melancholy detail of the pernicious effects of spirituous liquors upon the body, it may not be

improper to enumerate the uſual cauſes which lead to their intemperate uſe. They are, 1. Expoſure to exceſſive heat and cold. 2. Hard labour, diſproportioned to the ſtrength of the body. 3. Hunger, more eſpecially thoſe degrees of it which have been excited by long intervals between meals. 4. Long ſpeaking, or long ſittings in company. 5. Smoking and chewing tobacco. 6. Taking medicines in ardent ſpirits. 7. Breeding ſickneſs. 8. Great domeſtic care. I have of obſerved this cauſe to produce it, in ſeveral inſtances in women. 9. Domeſtic vexations, more eſpecially conjugal infelicity. 10. The infection of company that is addicted to ſtrong drink. 11. Debt. 12. The corrodings of a guilty conſcience; and, 13. Solitude where the mind does not poſſeſs reſources in itſelf, in books, or religion. It is remarkable that an intemperate uſe of ardent ſpirits is ſeldom produced by that grief which follows the death of relations or friends.

In the uſe of ſpirits, there are certain progreſſive ſtages which deſerve to be mentioned. Men begin generally by drinking them in a diluted ſtate, at dinner only. They next drink them in the ſame ſtate in the afternoon and evening. In the courſe of a few years, they call for them in the forenoon, and ſoon afterwards before breakfaſt, encreaſing their ſtrength from time to time until they finally drink

drink them in a undiluted ſtate during every hour of the night. I have known ſeveral perſons who have paſſed through all the above ſtages of intemperance, in whom the pulſe of life ſeemed to be ſupported for ſeveral months before their death, only by drinking from one to two quarts of raw ſpirits every night.

I ſhall now proceed to combat ſome prejudices in favour of the uſe of ſpirituous liquors.

THE *three* occaſions in which ſpirits have been thought moſt neceſſary and uſeful are the following:

1. IN very cold weather.

2. IN very warm weather. And,

3. IN times of hard labour.

1. THERE cannot be a greater error than to ſuppoſe that ſpirituous liquors leſſen the effects of cold upon the body. On the contrary, I maintain that they always render the body more liable to be affected and injured by cold. The temporary warmth they produce, is always ſucceeded by chillineſs. If any thing, beſides warm cloathing and exerciſe, be neceſſary to warm the body in cold weather, a plentiful meal of wholſome food is

at all times sufficient for that purpose. This, by stimulating the stomach, invigorates the whole system, and thus renders it less sensible of the cold.

2. It is equally absurd to suppose that spirituous liquors lessen the effects of heat upon the body. So far from it, they rather encrease them. They add an internal heat to the external heat of the sun; they dispose to fevers and inflammations of the most dangerous kind; they produce preternatural sweats which weaken, instead of an uniform and gentle perspiration, which exhilarates the body. Half the diseases which are said to be produced by warm weather, I am persuaded are produced by the spirits which are swallowed to lessen its effects upon the system.*

3. I

* "I aver from my own knowledge and custom (says Dr. Mosely*) as well as the custom and observations of many other people, that those who drink nothing but *water*, or make it their principal drink, are but little affected by the climate, and can undergo the greatest fatigue without inconvenience. Those who use water for their common drink will never be subject to troublesome or dangerous diseases, and the only inconvenience attending water drinkers is, that their appetite is so keen that they eat more than they ought."

"Rum

* Diseases of tropical climates.

3. I maintain with equal confidence, that ſpirituous liquors do not leſſen the effects of hard labour upon the body. Look at the horſe, with every muſcle of his body ſwelled from morning till night in the plough, or the team, does he make ſigns for ſpirits to enable him to cleave the earth, or to climb a hill?—No. He requires nothing but cool water and ſubſtantial food. There is neither ſtrength nor nouriſhment in ſpirituous liquors. If they produce vigour in labour, it is of a tranſient nature, and is always ſucceeded by a ſenſe of weakneſs and fatigue. Theſe facts are founded in obſervation; for I have repeatedly ſeen thoſe men perform the greateſt exploits in work both as to their degrees and duration, who never taſted ſpirituous liquors.

But are there no conditions of the human body in which ſpirituous liquors are required? Yes, there

"Rum (ſays Dr. Bell†) whether uſed habitually, moderately, or in exceſſive quantities, in the Weſt-Indies, always diminiſhes the ſtrength of the body, and therefore renders the men more ſuſceptible of diſeaſe, and unfit for any ſervice in which vigor or activity are required."

† Inquiry into the cauſes which produce, and the means of preventing diſeaſes among Britiſh officers, ſoldiers, and others in the Weſt-Indies.

there are; 1ſt. In thoſe caſes where the body has been exhauſted by any cauſes, and faintneſs, or a ſtoppage in the circulation of the blood has been produced, the ſudden ſtimulus of ſpirits may be neceſſary. In this caſe we comply ſtrictly with the advice of Solomon, who confines the uſe of "ſtrong drink," only to him "that is ready to periſh!" and 2dly. When the body has been long expoſed to wet weather, and more eſpecially if cold be joined with it, a moderate quantity of ſpirits is not only proper but highly uſeful to obviate debility, and thus to prevent a fever. I take theſe to be the only two caſes that can occur, in which ſpirituous liquors are innocent or neceſſary.

But if we reject ſpirits from being part of our drinks, what liquors ſhall we ſubſtitute in the room of them? For cuſtom, the experience of all ages and countries, and even nature herſelf, all ſeem to demand drinks more grateful and more cordial than ſimple water.

To this I ſhall reply, by recommending in the room of ſpirits, in the firſt place,

1. CYDER. This excellent liquor contains a ſmall quantity of ſpirit, but ſo diluted and blunted, by being combined with an acid and a large quantity of ſacharine matter and water, as to be perfectly

fectly inoffenſive and wholeſome. It diſagrees only with perſons ſubject to the rheumatiſm, but it may be rendered inoffenſive to ſuch people by extinguiſhing a red hot iron in it, or by diluting it with water. It is to be lamented that the late froſts in the ſpring often deprive us of the fruit which affords this liquor. But the effects of theſe froſts have been in ſome meaſure obviated, by giving an orchard a north-weſt expoſure, ſo as to check too early vegetation, and by kindling two or three large fires of bruſh and ſtraw to the windward of the orchard, the evening before we expect a night of froſt. This laſt expedient, has in many inſtances within the compaſs of my knowledge, preſerved the fruit of an orchard, to the great joy and emolument of the ingenious huſbandman.

2. BEER is a wholſome liquor compared with ſpirits. The grain from which it is obtained is not liable like the apple, to be affected by froſt, and therefore it can always be procured at a moderate expenſe. It abounds with nouriſhment—hence we find many of the common people in Great Britain, endure hard labour with no other food than a quart or three pints of this liqnor, with a few pounds of bread a-day.

3. WINE is likewiſe a wholeſome liquor, compared with ſpirits. The low wines of France, I believe

believe, could be drank at a leſs expence than ſpirits, in this country. The peaſants in France, who drink theſe liquors in large quantities, are a healthy and ſober body of people. Wines of all kinds yield, by chemical analyſis, the ſame principles as cyder, but in different proportions; hence they are both cordial and nouriſhing. It has been remarked, that few men ever become *habitual* drunkards upon wine. It derives its reliſh principally from company, and is ſeldom, like ſpirituous liquors, drank in a chimney corner, or in a cloſet. The effects of wine upon the *temper* are likewiſe in moſt caſes, directly oppoſite to thoſe that were mentioned of ſpirituous liquors. It muſt be a bad heart, indeed, that is not rendered more chearful and more generous, by a few glaſſes of wine*.

4. MELASSES and WATER compoſe another

* If two barrels of cyder freſh from the preſs, are boiled into one, and afterwards fermented, and kept for two or three years in a dry cellar, it affords a liquor which (according to the quality of the apple from which the cyder is made) has the taſte of Malaga or Rheniſh wine. This liquor, when mixed with water, affords a very agreeable drink in ſummer. I have taken the liberty to call it *Pomona wine*. Another method of obtaining a pleaſant wine from the apple, is to add to four and twenty gallons of new cyder, three gallons of a ſyrup made from the expreſſed juice of ſweet apples. When thoroughly fermented, and kept for ſome time, it becomes fit for uſe.

other excellent ſubſtitute for ſpirits. It is both cordial and nouriſhing.

5. The SUGAR MAPLE tree affords a thin JUICE in ſummer, which is cooling and refreſhing. It has long been uſed in Connecticut, for this purpoſe in the time of harveſt. The ſettlers in the weſtern counties of Pennſylvania and New-York, will do well to ſuffer a few of the trees which yield this pleaſant juice, to remain in all their fields. They may prove the means, not only of ſaving their children and grand-children many hundred pounds, but of ſaving their bodies from diſeaſe and death, and their ſouls from miſery beyond the grave.

6. VINEGAR and WATER ſweetened with ſugar or melaſſes, is an agreeable drink in warm weather. I beg leave to recommend this wholeſome liquor to reapers in a particular manner. It is pleaſant and cooling. It promotes perſpiration, and reſiſts putrefaction. Vinegar and water conſtituted the only drink of the ſoldiers of the Roman republic; and it is well known that they marched and fought in a warm climate, and beneath a load of arms that weighed 60lbs. Boaz, a wealthy farmer in Paleſtine, we find, treated his reapers with nothing but bread dipped in vinegar.

Under

Under this head, I ſhould not neglect to recommend BUTTER MILK and WATER, or SOUR MILK (commonly called bonneclabber) and WATER. It will be rendered more grateful by the addition of a little ſugar. PUNCH is likewiſe calculated to leſſen the effects of heat, and hard labour upon the body. The ſpirit in this liquor is blunted by its union with the vegetable acid. Hence it poſſeſſes, not only the conſtituent parts, but moſt of the qualities of cyder and wine. To render this liquor perfectly innocent and wholeſome, it muſt be drank *weak*, in *moderate* quantities, and *only* in warm weather. Say not, that ſpirits have become neceſſary in harveſt, from habit and the cuſtom of the country. The cuſtom of ſwallowing this liquid fire, is a bad one, and the habit of it may be broken. Let half a dozen farmers in a neighbourhood, combine to allow higher wages to their reapers than are common, and a ſufficient quantity of *any* of the liquors I have recommended, and they may ſoon aboliſh the practice of giving them ſpirits. They will in a little while be delighted with the good effects of their aſſociation. Their grain will be ſooner and more carefully gathered into their barns, and an hundred diſagreeable ſcenes of ſickneſs and contention will be avoided, which always follow in a greater or leſs degree the uſe of ſpirituous liquors.

To

To enable the body to ſupport the waſte of its ſtrength by labour, the ſtomach ſhould be *conſtantly*, but *moderately*, ſtimulated by aliment of a particular kind. Labourers bear with great difficulty long intervals between their meals. They ſhould always eat four or five times a-day in time of harveſt, or at other ſeaſons of great bodily exertion. The food at theſe times ſhould be *ſolid*, conſiſting chiefly of ſalted meat. The vegetables uſed with it ſhould poſſeſs ſome activity. Onions and garlic are of a moſt cordial nature. Theſe vegetables compoſed part of the diet which enabled the Iſraelites to endure, in a warm climate, the heavy taſks impoſed upon them by their Egyptian maſters. They were likewiſe eaten by the Roman farmers to repair the waſte of their ſtrength by the toils of harveſt. But further; There are certain SWEET SUBSTANCES which ſupport the body in labour. The negroes in the Weſt Indies grow fat and ſtrong by drinking the juice of the ſugar cane in the ſeaſon of grinding it. The Jewiſh ſoldiers were invigorated by occaſionally eating raiſins and figs. A bread compoſed of wheat flour, melaſſes, and ginger, (compoſing what is called ginger bread), and taken in ſmall quantities, during the day, is happily calculated to obviate the debility which is ſo apt to be brought on by labour. All theſe ſubſtances, whether of an animal or vegetable nature, which

which have been mentioned, ſhould be uſed by labouring people. They leſſen the neceſſity for cordial drinks, and they impart *equal* and *durable* ſtrength to every part of the ſyſtem.

THERE are certain claſſes of people to whom I beg leave to ſuggeſt a caution or two upon the uſe of ſpirituous liquors.

1. VALETUDINARIANS, eſpecially thoſe who labour under diſorders of the ſtomach and bowels, are very apt to fly to ſpirits for relief. Let ſuch people be cautious how they repeat this dangerous remedy. I have known many men and women, of excellent characters and principles, who have been betrayed by occaſional doſes of gin or brandy to eaſe the cholic, into a love of ſpirituous liquors, inſomuch that they have afterwards fallen ſacrifices to their fatal effects. The different preparations of opium are a thouſand times more ſafe and innocent than ſpirituous liquors, in all ſpaſmodic affections of the ſtomach and bowels. So apprehenſive am I of the danger of contracting a love for ſpirituous liquors, by accuſtoming the ſtomach to their ſtimulus, that I think the fewer medicines we exhibit in ſpirituous vehicles the better.

2. SOME people, from living in countries ſubject to the intermitting fever, endeavour to fortify themſelves

themſelves againſt it by two or three glaſſes of bitters made with ſpirits every day. There is great danger of men becoming ſots from this practice. Beſides, this mode of preventing intermittents is by no means a certain one. A much better ſecurity againſt them is to be found in the Jeſuits bark. A tea-ſpoonful of this excellent medicine taken every morning during the ſickly ſeaſon, has in many inſtances preſerved whole families, in the neighbourhood of rivers and mill-ponds, from fevers of all kinds. If Jeſuits bark cannot be had, a gill or half a pint of a ſtrong infuſion of centaury, camomile, wormwood, or rue, in *water*, with a little calamus mixed with it, may be taken with nearly the ſame advantage as the bark, every morning. Thoſe who live in a ſickly part of the country, and cannot procure the bark, or any of the bitters which have been mentioned, I would adviſe to avoid the morning and evening air in the ſickly months—to kindle fires in their houſes on damp days, and in cool evenings throughout the whole ſummer, and to put on woollen clothing about the firſt week in September. The laſt part of theſe directions applies only to the inhabitants of the middle ſtates. Theſe cautions, I am perſuaded, will be more effectual in preventing autumnal fevers than the beſt preparations that can be made from bitters in ſpirits.

3. MEN, who follow profeſſions that require a conſtant exerciſe of the mind or body, or perhaps both, are very apt to ſeek relief from fatigue in ſpirituous liquors. To ſuch perſons I would beg leave to recommend the uſe of TEA inſtead of ſpirits. This gentle ſtimulus, by reſtoring excitement, removes fatigue, and invigorates the whole ſyſtem. I am no advocate for the general or exceſſive uſe of tea. When drank too ſtrong, it is hurtful, eſpecially to the female conſtitution; but when drank of a moderate degree of ſtrength, and in moderate quantities, with ſugar and cream, or milk, I believe it is in general innocent, and at all times to be preferred to ſpirituous liquors. Anthony Benezet, one of the moſt induſtrious ſchoolmaſters I ever knew, told me that he had been preſerved from the love of ſpirituous liquors by contracting a love for tea in early life. Three or four diſhes taken in an afternoon, carried off the fatigue of a whole day's labour in his ſchool. This worthy gentleman lived to be 71 years of age, and afterwards died of an acute diſeaſe in the full exerciſe of all the faculties of his mind*.

To

* An old and intelligent ſea captain, has left upon record, the following teſtimony in favor of tea, coffee, and chocolate, in preference to ſpirituous liquors, in ſupporting the body under fatigue. "I have always obſerved (ſays he) when

To every claſs of my readers, I beg leave to ſuggeſt a caution againſt the uſe of TODDY. I acknowledge that I have known ſome men, who, by limiting its ſtrength conſtantly by meaſuring the ſpirit and water, and who by drinking it *only* at their *meals*, have drunken toddy for many years without ſuffering in any degree from it: but I have known many more who have been inſenſibly led from drinking toddy for their conſtant drink, to take drams in the morning, and have afterwards paid their lives as the price of their folly. I ſhall ſelect one caſe from among many, to ſhew the ordinary progreſs of intemperance in the uſe of ſpirituous liquors.—A gentleman, once of a fair and ſober character, in the city of Philadelphia, for many years drank toddy as his conſtant drink. From this he proceeded to drink grog. After a while nothing would ſatisfy him but ſlings made of equal parts of rum and water, with a little ſugar. From ſlings he advanced to raw rum—and from common

when ſailors drink *tea* it weans them from the thoughts of drinking ſtrong liquors, and pernicious grog, and with tea they are ſoon contented. Not ſo, with whatever will intoxicate, be it what it will. This has always been my remark. I therefore, always encouraged it without their knowing why. Coffee has the ſame good effect. Alſo cocoa, or chocolate."——*Foreſt's Voyage from Calcutta to the Merqui Archipelago.*

common rum to Jamaica ſpirits. Here he reſted for a few months; but at laſt, he found even Jamaica ſpirits were not ſtrong enough to warm his ſtomach, and he made it a conſtant practice to throw a table ſpoonful of ground pepper into each glaſs of his ſpirits, in order (to uſe his own expreſſion) "to take of their coldneſs." It is hardly neceſſary to add, that he ſoon afterwards died a martyr to his own intemperance.

I ſhall conclude what has been ſaid of the effects of ſpirituous liquors with two obſervations—1. A people corrupted by ſtrong drink cannot long be a *free* people. The rulers of ſuch a community will ſoon partake of the vices of that maſs from which they were ſecreted, and all our laws and governments will ſooner or later bear the ſame marks of the effects of ſpirituous liquors which were deſcribed formerly upon individuals. I ſubmit it therefore to the conſideration of our rulers, whether more laws ſhould not be made to increaſe the expenſe and leſſen the conſumption of ſpirituous liquors, and whether ſome mark of public infamy ſhould not be inflicted by law upon every man, convicted before a common magiſtrate of drunkenneſs.

THE ſecond and laſt obſervation I ſhall offer, is of a

ſerious nature. It has been remarked, that the Indians have diminiſhed every where in America ſince their connections with the Europeans. This has been juſtly aſcribed to the Europeans having introduced ſpirituous liquors among them. Let thoſe men, who are every day turning their backs upon all the benefits of cultivated ſociety, to ſeek habitations in the neighbourhood of Indians, conſider how far this wandering mode of life is produced by the ſame cauſe which has ſcattered and annihilated ſo many Indian tribes. Long life, and the ſecure poſſeſſion of property, in the land of their anceſtors, were looked upon as bleſſings among the ancient Jews. For a ſon to mingle his duſt with the duſt of his father, was to act worthy of his inheritance; and the proſpect of this honour often afforded a conſolation even in death. However exalted, my countrymen, your ideas of liberty may be, while you expoſe yourſelves by the uſe of ſpirituous liquors to this conſequence of them, you are nothing more than the pioneers, or in more ſlaviſh terms, "the hewers of wood" of your more induſtrious neighbours.

If the facts that have been ſtated, have produced in any of my readers, who have ſuffered from the uſe of ſpirituous liquors, a reſolution to abſtain from them hereafter, I muſt beg leave to inform

them, that they must leave them off *suddenly* and *entirely*. No man was ever *gradually* reformed from drinking spirits. He must not only avoid tasting, but even smelling them, until long habits of abstinence have subdued his affection for them. To prevent his feeling any inconveniences from the sudden loss of their stimulus upon his stomach, he should drink plentifully of camomile or of any other bitter tea, or a few glasses of sound old wine every day. I have great pleasure in adding, that I have seen a number of people who have been *effectually* restored to health—to character—and to usefulness to their families and to society, by following this advice.

AN INQUIRY INTO THE CAUSES AND CURE OF THE PULMONARY CONSUMPTION.

INQUIRY, &c.

IN an Eſſay, entitled "Thoughts on the Pulmonary Conſumption,"* I attempted to ſhew that this diſorder was the effect of cauſes which induced general debility, and that the only hope of diſcovering a cure for it ſhould be directed to ſuch remedies as act upon the whole ſyſtem. In the following inquiry, I ſhall endeavour to eſtabliſh the truth of each of thoſe opinions, by a detail of facts and reaſonings, at which I only hinted in my former eſſay.

THE

* Medical Inquiries and Obſervations.

THE method I have chosen for this purpose, is to deliver, and afterwards to support, a few general propositions.

I shall begin by remarking,

I. THAT the Pulmonary Consumption is a disease of debility.

THIS I infer, 1st, From the remote and exciting causes which produce it. The remote causes are pneumony, catarrh, hæmoptysis, rheumatism, gout, asthma, scrophula, nervous and intermitting fevers, measles, repelled humors from the surface of the body, the venereal disease, obstructed menses, sudden growth about the age of puberty, grief, and all other debilitating passions of the mind; hypochondriasis, improper lactation, excessive evacuation of all kinds, more especially by stool*, cold and damp air, external violence acting upon the

* Sir George Baker relates in the second volume of the Medical Transactions, that Dr. Blanchard had informed him that he had seen the consumption brought on ten persons out of ninety, by excessive purging used to prepare the body for the small-pox. I have seen a case of consumption in a youth of 17, from the spitting produced by the intemperate use of segars.

the body;* and finally every thing that tends directly or indirectly to impair the vigor of the system.

THE most frequent exciting cause of consumption is the alternate application of heat and cold to the whole external surface of the body, but all the remote causes which have been enumerated, operate as exciting causes of consumption when they act on previous debility. Original injuries of the lungs seldom induce this disorder except they first induce a debility of the whole system by a troublesome and obstinate cough.

2. FROM the occupations and habits of persons who are most liable to this disorder. These are studious men, and mechanics who lead sedentary lives in confined places; also women, and all persons of irritable habits, whether of body or mind.

3. FROM the period in which persons are most liable to be affected by this disorder. This is generally

* Dr. Lind says that out of 360 patients whom he attended between July 1st, 1758, and July 1st, 1760, in consumptions, the disorder was brought on *one fourth* of them, by falls, bruises, and strains received a year or two before the disease made its appearance.

nerally between the 18th and 36th year of life, a period in which the ſyſtem is liable in a peculiar manner to moſt diſeaſes which induce the diſorder, and in which indirect debility is oftener produced than in any other ſtage of life, by the exceſſive exerciſes of the body and mind in the purſuits of buſineſs or pleaſure.

I have conformed to authors, in fixing the period of conſumptions between the 18th and 36th year of life—but it is well known that it ſometimes appears in children, and frequently in perſons beyond the 40th, or even 50th year of life.

II. THE pulmonary conſumption is a primary diſeaſe of the *whole* ſyſtem. This I infer,

1. FROM the cauſes which produce it, acting upon the whole ſyſtem.

2. FROM the ſymptoms of general debility which always precede the affection of the lungs. Theſe ſymptoms are a quick pulſe, eſpecially towards evening; a heat and burning in the palms of the hands; faintneſs, head-ach, ſickneſs at ſtomach, and an occaſional diarrhœa. I have frequently obſerved each of theſe ſymptoms for ſeveral months before I have heard of a ſingle complaint in the breaſt.

3. FROM

3. FROM the pulmonary consumption alternating with other diseases which obviously belong to the whole system. I shall briefly mention these diseases.

THE RHEUMATISM. I have seen many cases in which this disease and the consumption have alternately, in different seasons or years, affected the system. In the winter of 1792, three clinical patients in the Pennsylvania hospital exemplified by their complaints the truth of this observation. They were relieved several times of a cough by pains in their limbs, and as often, the pains in their limbs seemed for a while to promise a cure to their pulmonic complaints.

THE GOUT has often been observed to alternate with the pulmonary consumption, especially in persons in the decline of life. Dr. Sydenham describes a short cough continuing through the whole winter, as a symptom of gouty habits. A gentleman from Virginia died under my care in the spring of 1788, in the 45th year of his age, with all the symptoms of pulmonary consumption, which had frequently alternated with pains and a swelling in his feet.

THE pulmonary consumption has been observed to alternate with MADNESS. Of this I have seen

two

two inſtances, in both of which, the cough, and expectoration were wholly ſuſpended during the continuance of the derangement of the mind. Dr. Mead mentions a melancholy caſe of the ſame kind in a young lady; and ſimilar caſes are to be met with in other authors. In all of them the diſeaſe proved fatal. In one of the caſes which came under my notice, the ſymptoms of conſumption returned before the death of the patient.

I have likewiſe witneſſed two caſes in which the return of reaſon after madneſs, was ſuddenly ſucceeded by a fatal pulmonary conſumption. Perhaps the falſe hopes, and even the cheerfulneſs which ſo univerſally occur in this diſorder, may be reſolved into a morbid ſtate of the mind, produced by a general derangement of the whole ſyſtem. So univerſal are the deluſion and hopes of patients with reſpect to the nature and iſſue of this diſorder, that I have never met with but one man, who, upon being aſked what was the matter with him, anſwered unequivocally, "that he was in a conſumption!"

AGAIN—Dr. Bennet mentions a caſe of "A phthiſical patient who was ſeized with a violent PAIN IN THE TEETH for two days, and in whom, during that time, every ſymptom of a conſumption, except the leanneſs of the body, altogether vaniſhed;"

iſhed;" and he adds further, "that a deſluxion on the lungs had often been relieved by SALIVARY EVACUATIONS."*

I have ſeen ſeveral inſtances in which the pulmonary ſymptoms have alternated with HEAD-ACH and DYSPEPSIA,——alſo with pain and noiſe in one of the EARS. This affection of the ears ſometimes continues throughout the whole diſeaſe without any remiſſion of the pulmonary ſymptoms. I have ſeen one caſe of a diſcharge of matter from the left ear without being accompanied by either pain or noiſe.

IN all our books of medicine are to be found caſes of conſumption alternating with ERUPTIONS ON THE SKIN.

AND who has not ſeen the pulmonary ſymptoms alternately relieved, and reproduced by the appearance or ceſſation of a diarrhœa, or pains in the BOWELS?

To theſe facts I ſhall only add, under this head, as a proof of the conſumption being a diſeaſe of the whole ſyſtem, that it is always more or leſs

* Treatiſe of the Nature and Cure of Conſumptions—Exercitation X.

leſs relieved by the change which is induced in the ſyſtem by pregnancy.

4. I infer that the pulmonary conſumption is a diſeaſe of the whole ſyſtem from its analogy with ſeveral other diſeaſes which, though accompanied by local affections, are obviouſly produced by a morbid ſtate of the whole ſyſtem.

THE Rheumatiſm, the Gout, the Meaſles, Small-pox, the different ſpecies of Cynanche—all furniſh examples of the connection of local affections with a general diſeaſe; but the APOPLEXY, and the PNEUMONY furniſh the moſt ſtriking analogies of local affection, ſucceeding a general diſorder of the ſyſtem in the pulmonary conſumption.

THE moſt frequent cauſe of apoplexy is a general debility of the ſyſtem, produced by intemperance in eating and drinking. The phænomena of the diſeaſe are produced by an effuſion of blood or ſerum, in conſequence of a morbid diſtenſion, or of a rupture of the veſſels of the brain. The pulmonary conſumption begins and ends in the ſame way, allowing only for the difference of ſituation and ſtructure of the brain and lungs. After the production of prediſpoſing debility from the action of the remote cauſes formerly enumerated, the fluids are determined to the weakeſt part of the body.

body. Hence effuſions of ſerum or blood take place in the lungs. When ſerum is effuſed, a pituitous or purulent expectoration alone takes place; —when blood is diſcharged, a diſeaſe is produced which has been called Hæmoptyſis. An effuſion of blood in the brain, brought on by the operation of general debility, has been called by Dr. Hoffman, with equal propriety, a hærmorrhage of the brain. The effuſion of blood in the lungs in conſequence of the rupture of a blood veſſel is leſs fatal than the ſame accident when it occurs in the brain, only becauſe the blood in the former caſe is more eaſily diſcharged from the ſyſtem. Where no rupture of a blood veſſel is produced, death is nearly as ſpeedy and certain in the one caſe as in the other.* Diſſections ſhow many caſes of ſuffocation and and death, from the lungs being preternaturally filled with blood or ſerum. From this great analogy between the remote and proximate cauſes of the two diſeaſes which have been deſcribed, I have taken the liberty to call them both by the name of apoplexy. The only ſymptom which does not accord with the derivation of the term, is, that in the apoplexy of the lungs, the patient does not fall down

* I have ſeen two caſes of ſudden death from Hemoptyſis. In one of them there was very little blood diſcharged through the mouth.

down as if by an external ſtroke, which is moſt frequently the caſe in the apoplexy of the brain.

THE hiſtory of the remote and proximate cauſes of pneumony will furniſh us with a ſtill more remarkable analogy of the connection between a *local* affection, and a *general* diſeaſe of the ſyſtem. The pneumony is produced by remote exciting cauſes, which act on the whole ſyſtem. The whole arterial ſyſtem is frequently agitated by a fever in this diſorder before a pain is perceived in the breaſt or ſides, and this fever generally conſtitutes the ſtrength and danger of the diſeaſe. The expectoration which terminates the diſorder in health, is always the effect of effuſions produced by a general diſeaſe, and even the vomicas, which ſometimes ſucceed a deficiency of bleeding in this diſorder, always depend upon the ſame general cauſe. From this view of the analogy between pneumony and pulmonary conſumption, it would ſeem that the two diſeaſes differed from each other only by the ſhorter or longer operation of the cauſes which induce them, and by the greater or leſs violence and duration of their ſymptoms. The pneumony appears to be an *acute* conſumption, and the conſumption a *chronic* pneumony. From the analogy of the pulmonary conſumption

with

with the diminutive term of certain fevers, I have taken the liberty of calling it a PNEUMONICULA.

5. I infer that the pulmonary conſumption is a diſeaſe of the whole ſyſtem, from its exiſtence without ulcers in the lungs. Of this there are many caſes recorded in books of medicine.

DR. Leigh informs us in his natural hiſtory of Lancaſhire, that the conſumption was a very common diſeaſe on the ſea coaſt of that country; but that it was not accompanied either by previous inflammation or ulcers in the lungs. It was generally attended, he ſays, by an unuſual peeviſhneſs of temper.

6. AND laſtly, I infer, that the pulmonary conſumption is a diſeaſe of the whole ſyſtem, from its being relieved, or cured, only by remedies which act upon the whole ſyſtem. This will appear, I hope, hereafter, when we come to treat of the cure of this diſorder.

LET us now inquire how far the principles I have laid down will apply to the ſuppoſed proximate cauſes of conſumption. Theſe cauſes have been ſaid to be—an abſceſs in the lungs, hæmoptyſis, tubercles, catarrh, hereditary diatheſis, contagion, and the matter of cutaneous eruptions or ſores repelled

pelled, and thrown upon the lungs. I ſhall make a few obſervations upon each of them.

1. An abſceſs in the lungs is generally the conſequence of a neglected, or half cured pneumony. It is ſeldom fatal, where it is not connected with a prediſpoſition to conſumption from general debility, or where general debility is not previouſly induced by the want of appetite, ſleep, and exerciſe, which ſometimes accompanies that diſorder of the lungs. This explanation of the production of conſumption by an abſceſs in the lungs, will receive further ſupport from attending to the effects of wounds in the lungs. How ſeldom are they followed by pulmonary conſumption; and this only becauſe they are as ſeldom accompanied by prediſpoſing general debility. I do not recollect a ſingle inſtance of this diſorder having followed a wound in the lungs, either by the bayonet, or a bullet, during the late war. The recoveries which have ſucceeded ſuch wounds, and frequently under the moſt unfavorable circumſtances, ſhew how very improbable it is that a much ſlighter affection of the lungs ſhould become the cauſe of a pulmonary conſumption.

A Britiſh officer, whom I met in the Britiſh camp, a few days after the battle of Brandywine, in

September, 1777, informed me that the ſurgeon general of the royal army had aſſured him, that out of twenty-four ſoldiers who had been admitted into the hoſpitals, during the campaign of 1776, with wounds in their lungs, twenty-three of them had recovered. Even primary diſeaſes of the lungs often exiſt with peculiar violence, or continue for many years without inducing a conſumption. I have never known but one inſtance of the hooping cough ending in conſumption, and all our books of medicine contain records of the aſthma continuing for 20 and 30 years without terminating in that diſorder. The reaſon in both caſes, muſt be aſcribed to thoſe two original diſorders of the lungs not being accompanied by general debility. One fact more will ſerve to throw ſtill further light upon the ſubject. Millers are much afflicted with a cough from floating particles of flour conſtantly irritating their lungs, and yet they are not more ſubject to conſumptions than other labouring people. Hence "a miller's cough," is proverbial in ſome places, to denote a cough of long continuance without danger.

2. The hæmoptyſis is either a local diſeaſe, or it is the effect of general debility of the whole ſyſtem. When it is local, or when it is the effect of cauſes which induce a *temporary* or *acute* debility

only in the ſyſtem, it is ſeldom followed by conſumption. The accidental diſcharge of blood from the lungs, from injuries, and from an obſtruction of the menſes in women, is of this kind. Many perſons are affected by this ſpecies of hæmorrhage once or twice in their lives, without ſuffering any inconvenience from it afterwards. I have met with ſeveral caſes in which it has occurred for many years every time the body was expoſed to any of the cauſes which induce *ſudden*, direct, or indirect debility, and yet no conſumption has followed it. The late king of Pruſſia informed Dr. Zimmerman that he had been frequently attacked by it during his ſeven years war, and yet he lived notwithſtanding above twenty years afterwards without any pulmonary complaints. It is only in perſons who labour under *chronic* debility, that an hæmoptyſis is neceſſarily followed by conſumption.

3. I yield to the popular mode of expreſſion when I ſpeak of a conſumption being produced by tubercles. But I maintain that they are the *effects* of general debility communicated to the bronchial veſſels which cauſe them to effuſe a preternatural quantity of mucus. This mucus is ſometimes poured into the trachea from whence it is diſcharged by hawking, more eſpecially in the morning; for

for it is effuſed more copiouſly during the languid hours of ſleep than in the day time. But this mucus is frequently effuſed into the ſubſtance of the lungs, where it produces thoſe tumours we call tubercles. When this occurs, there is either no cough* or a very dry one. That tubercles are formed in this way, I infer from the diſſections and experiments of Dr. Stark†, who tells us, that he found them to conſiſt of inorganic matter—that he was unable to diſcover any connection between them and the pulmonary veſſels, by means of the microſcope or injections, and that they firſt opened into the trachea through the bronchial veſſels. It is remarkable that the color and conſiſtence of the matter of which they are compoſed, is nearly the ſame as the matter which is diſcharged from the trachea, in the moiſt cough which occurs from a relaxation of the bronchial veſſels.

I am aware that theſe tumours in the lungs have been aſcribed to ſcropula. But the frequent occurrence of conſumptions in perſons in whom no ſcrophulous taint exiſted, is ſufficient to refute this opinion. I have frequently directed my enquiries after this diſorder in conſumptive patients, and

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* See Med. Com. Vol. II.

† Clinical and Anatomical Obſervations, p. 26, 27. See alſo Morgagni, letter xxii. 21.

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have met with very few cases which were produced by it. It is probable that it may frequently be a predisposing cause of consumption in Great Britain, but I am sure it is not in the United States of America.

4. The catarrh is of two kind—acute and chronic, both of which are connected with general debility, but this debility is most obvious in the chronic catarrh: hence we find it encreased by every thing which acts upon the whole system, such as cold and damp weather, fatigue, and above all by old age, and relieved or cured by exercise, and every thing else which invigorates the whole system. This species of catarrh often continues for twenty or thirty years without inducing pulmonary consumption, in persons who pursue active occupations.

5. In the hereditary consumption there is either an hereditary debility of the whole system, or an hereditary mal-conformation of the breast. In the latter case, the consumption is the effect of weakness communicated to the whole system, by the long continuance of difficult respiration, or of such injuries being done to the lungs as are incompatible with health and life. It is remarkable, that the

the conſumptive diatheſis is more frequently derived from paternal than maternal anceſtors.

6. PHYSICIANS the moſt diſtinguiſhed for accurate obſervations have agreed, that the pulmonary conſumption may be communicated by contagion. However doubtful it may be in temperate, it cannot be controverted in warm climates. Morgagni informs us that, Valſalva (who was prediſpoſed to the conſumption) was ſo ſatisfied of its contagious nature, that he conſtantly avoided being preſent at the diſſection of the lungs of perſons who had died of that diſorder. I know that its progreſs in whole families has been aſcribed to a ſameneſs of original conſtitution, or mal-conformation of the breaſt in the members of the ſame family, or the fatigue which is incurred by attending, and the grief which follows the loſs of relations who periſh by that diſorder. Perhaps many of the caſes of conſumption, which have been aſcribed to contagion, may be accounted for by calling in the debilitating operation of one or both of thoſe cauſes; but there are caſes of the diſeaſe being communicated by contagion, which cannot be reſolved into the influence of either fatigue or grief.

THE late Dr. Beardſley, of Connecticut, informed me that he had known ſeveral black ſlaves, affected

affected by a consumption which had previously swept away several of the white members of the family to which they belonged. In these slaves no suspicion was entertained of the most distant relationship to the persons from whom they had had contracted the disorder; nor had fatigue or grief, from the causes beforementioned, been supposed to have had the least share in debilitating their bodies. Admitting then contagion to act as a remote cause of consumption, it does not militate against the theory which I have aimed to establish; for if the contagion follow the analogy of all the other contagions that we are acquainted with, it must act by debilitating the whole system. The approach of the jail fever and the plague is often indicated by general languor. The influenza and the measles are always accompanied by general debility, but the small pox furnishes an analogy to the case in question more directly in point. The contagion of this disorder, whether received by the medium of the air or the skin, never fails of producing a disease of the whole system, before it discovers itself in affections of those parts of the body on which the contagion produced its first operation.—I am disposed to believe, from several cases which have come under my notice, that the contagion which produces the consumption seldom acts in less than two or three months after it is received into the system. I once

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attended a lady, in whom the contagion did not discover itself in the lungs for nearly a year after she had been exposed to it, by attending a sister who had died of the consumption. In this case the effects of fatigue, and of grief were entirely worn away from the system by time, as well as by chearful society.

7. I GRANT that cutaneous humors, and the matter of old sores, when repelled, or suddenly healed, have in some cases fallen upon the lungs, and produced consumption. But I believe, in every case where this has happened, the consumption was preceded by general debility, or that it was not induced, until the whole system had been previously debilitated by a tedious and distressing cough.

IF the reasonings founded upon the facts which have been mentioned be just, then it follows,

III. THAT the cough, tubercles, ulcers, and purulent or bloody discharges which occur in the pulmonary consumption, are the *effects* and not the *causes* of the disease; and, that all attempts to cure it, by inquiring after tubercles and ulcers, or into the quality of the discharges from the lungs, are as fruitless as an attempt would be to discover the causes or cure of dropsies, by an examination of the qualites

qualities of collections of water, or to find out the causes and cure of fevers by the quantity or quality of the discharges which take place in those diseases from the kidneys and skin. I admit that the cough, ulcers, and tubercles, after they are formed, increase the danger of the disease, by becoming new causes of stimulus to the system, but in this they are upon a footing with those effusions in the viscera, which take place in the intermitting fever, which though they constitute no part of its cause, frequently produce symptoms and a termination which are wholly unconnected with the original disease.

The tendency of general debility to produce a disease of the lungs appears in many cases, as well as in the pulmonary consumption. Dr. Lind tells us, that the last stage of the jail fever was often marked by a cough. I have seldom been disappointed in looking for a cough and a copious excretion of mucus and phlegm after the 14th or 15th days of the nervous fever. Two cases of hypocondriasis under my care, ended in fatal disorders of the lungs. The debility of old age is generally accompanied by a troublesome cough, and the debility which precedes death, generally discovers its last symptoms in the lungs,—hence, most people die with what are called the *Rattles*. They are produced by

by a ſudden and copious effuſion of mucus in the bronchial veſſels of the lungs.

SHOULD it be aſked, why does general debility terminate by a diſorder in the lungs, rather than in any other part of the body?—I anſwer,—that it ſeems to be a law of the ſyſtem, that general debility ſhould always produce as a ſymptom ſome local diſeaſe. This local diſeaſe ſometimes manifeſts itſelf in dyſpepſia, as in the general debility which follows grief;—ſometimes it diſcovers itſelf in a diarrhœa as in the general debility which ſucceeds to fear.—Again it appears in the brain,—as in the general debility which ſucceeds intemperance, and the conſtant or violent exerciſe of the underſtanding, or of ſtimulating paſſions; but it more frequently appears in the lungs, as the conſequence of general debility. It would ſeem as if the debility in the caſes of conſumption is ſeated chiefly in the blood veſſels, while that debility which terminates in diſeaſes of the ſtomach and bowels, is confined chiefly to the nerves,—and that the local affections of the brain ariſe from a debility, invading alike the nervous and arterial ſyſtems. What makes it more probable, that the arterial ſyſtem is *materially* affected in the conſumption is, that the diſorder moſt frequently occurs in thoſe periods of life, and in thoſe habits in which

which a peculiar ſtate of irritability or excitability is ſuppoſed to be preſent in the arterial ſyſtem; alſo in thoſe climates in which there are the moſt frequent viciſſitudes in the temperature of the weather. It is remarkable, that that the debility in the inhabitants of the Weſt Indies, whether produced by the heat of the climate, or the exceſſive purſuits of buſineſs or pleaſure, generally terminates in dropſy, or in ſome diſorder of the alimentary canal.

I HAVE ſaid, that it ſeemed to be a law of the ſyſtem, that general debility ſhould always produce as a ſymptom ſome local affection. But to this law there are ſometimes exceptions: The Atrophy appears to be a conſumption without an affection of the lungs.—This diſorder is frequently mentioned by the writers of the 16th and 17th centuries by the name of Tabes. I have ſeen ſeveral inſtances of it in adults, but more in children, and a greater number in the children of black than of white parents. The hectic fever, and even the night ſweats, were as obvious in ſeveral of theſe caſes, as in thoſe conſumptions where general debility had diſcovered itſelf in an affection of the lungs.

I COME now to make a few obſervations upon the

the CURE of consumption; and here I hope it will appear, that the theory which I have delivered admits of an early and very important application to practice.

If the consumption be a disease of general debility, it becomes us to attempt the cure of it in its first stage,—that is, before it produce the symptoms of cough, bloody or purulent discharges from the lungs, and inflammatory or hectic fever. The symptoms which mark this first stage, are too seldom observed; or if observed, they are too often treated with equal neglect by patients and physicians. I shall briefly enumerate these symptoms. They are a slight fever encreased by the least exercise,—a burning and dryness in the palms of the hands, more especially towards evening,—rheumy eyes upon waking from sleep,—an encrease of urine,—a dryness of the skin, more especially of the feet in the morning,*—an occasional flushing in one, and sometimes in both cheeks,—

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* The three last mentioned symptoms are taken notice of by Dr Bennet, in his Treatise upon the Nature and Cure of the Consumption as *precursors* of the disorder. Dr. Boerhaave used to tell his pupils that they had never deceived him.

† I have seen the *hoarseness* in one case the first symptom of approaching consumption. In this symptom it preserves

a hoarſeneſs†—a ſlight or acute pain in the breaſt,—a fixed pain in one ſide, or ſhooting pains in both ſides,—head-ach,—occaſional ſick and fainty fits,—a deficiency of appetite, and a general indiſpoſition to exerciſe or motion of every kind.

It would be eaſy for me to mention caſes in which every ſymptom that has been enumerated has occurred within my own obſervations. I wiſh them to be committed to memory by young practitioners; and if they derive the ſame advantages from attending to them, which I have done, I am ſure they will not regret the trouble they have taken for that purpoſe. It is probable, while a morbid ſtate of the lungs is ſuppoſed to be the proximate cauſe of this diſorder, they will not derive much reputation or emolument from curing it in its forming ſtage; but let them remember, that in all attempts to diſcover the cauſes and cures of diſeaſes, which have been deemed incurable, a phyſician will do nothing effectual until he acquire a perfect indifference to his own intereſt and fame.

The remedies for conſumption in this ſtage of the diſorder are ſimple and certain. They conſiſt, in

† the analogy of pneumony, which often comes on with a hoarſeneſs, and ſometimes with paraphonia.

in a deſertion of all the remote, and exciting cauſes of the diſorder, particularly ſedentary employments, damp or cold ſituations, and whatever tends to weaken the ſyſtem. When the diſeaſe has not yielded to this deſertion of its remote and exciting cauſes, I have recommended the *cold bath*, *ſteel*, and *bark* with great advantage. However improper or even dangerous theſe remedies may be after the diſeaſe aſſumes an inflammatory or hectic type, and produces an affection of the lungs, they are perfectly ſafe and extremely uſeful in the ſtate of the ſyſtem which has been deſcribed. The uſe of the bark will readily be admitted by all thoſe practitioners who believe the pulmonary conſumption to depend upon a ſcrophulous diatheſis. Should even the lungs be affected by ſcrophulous tumors, it is no objection to the uſe of the bark; for there is no reaſon why it ſhould not be as uſeful in ſcrophulous tumors of the lungs, as of the glands of the throat, provided it be given before thoſe tumors have produced inflammation; and in this caſe, no prudent practitioner will ever preſcribe it in ſcrophula when ſeated even in the external parts of the body. To theſe remedies ſhould be added a diet moderately ſtimulating, and gentle exerciſe. I ſhall hereafter mention the different ſpecies of exerciſe, and the manner in which each of them ſhould be uſed ſo as to derive the utmoſt

moſt advantage from them. I can ſay nothing of the uſe of ſalt-water, or ſea-air in this ſtage of the conſumption from my own experience. I have heard them commended by a phyſician of Rhode-Iſland; and if they be uſed before the diſeaſe has diſcovered itſelf in pulmonary affections, I can eaſily conceive they may do ſervice.

If the ſimple remedies which have been mentioned have been neglected, in the firſt ſtage of the diſorder, it generally terminates in different periods of time, in pulmonary affections; which ſhew themſelves under one of the three following forms,—

1. A fever, accompanied by a cough, a hard pulſe, and a diſcharge of blood, or mucous matter from the lungs.

2. A fever of the hectic kind, accompanied by chilly fits, and night ſweats, and a pulſe full, quick, and occaſionally hard. The diſcharges from the lungs in this ſtate of the diſorder, are frequently purulent.

3. A fever with a weak quick pulſe, a troubleſome cough, and copious purulent diſcharges from the lungs, a hoarſe and weak voice, and chilly fits and

and night ſweats, alternating occaſionally with a diarrhœa.

THESE three different forms of the pulmonary affection have been diſtingniſhed by the names of the firſt, ſecond, and third ſtages of the conſumption; but as they do not always ſucceed each other in the order in which they have been mentioned, I ſhall hereafter diſtinguiſh them by the name of ſpecies, in conformity to our modern nomenclatures of medicine, although it would be more proper, on ſome accounts, to conſider them as different ſtates of the ſyſtem.

THE firſt I ſhall call the INFLAMMATORY—the ſecond the HECTIC, and the third the TYPHUS ſpecies. I have ſeen the pulmonary conſumption come on ſometimes with all the ſymptoms of the ſecond, and ſometimes with the moſt of the ſymptoms of the third ſpecies; and I have ſeen two caſes in which a hard pulſe, and other ſymptoms of inflammatory action appeared in the laſt hours of life. It is agreeable to purſue the analogy of this diſorder with a pneumony, or an acute inflammation of the lungs. They both make their firſt appearance in the ſame ſeaſons of the year. It is true, the pneumony moſt frequently attacks with inflammatory ſymptoms; but it ſometimes occurs with ſymptoms which for-

bid blood-letting, and I have more than once ſeen it attended by ſymptoms which required the uſe of wine and bark. The pneumony is attended at firſt by a dry cough, and an expectoration of ſtreaks of blood—the cough in the conſumption, in like manner, is at firſt dry, and attended by a diſcharge of blood from the lungs, which is more copious than in the pneumony, only becauſe the lungs are more relaxed in the former than in the latter diſorder. There are caſes of pneumony in which no cough attends. I have ſeen caſes of pulmonary conſumption, in which nothing but a difficulty of breathing diſcovered a morbid ſtate of the lungs, and one in which there was an entire abſence of cough.*

* In the year 1785, I attended a young lady who had complained of a pain in her right ſide, and had frequent chills with a fever of the hectic kind. They all gave way to frequent and gentle bleedings. In the ſummer of 1786, ſhe was ſeized with the ſame complaints, and as ſhe had great objections to bleeding, ſhe conſulted a phyſician who gratified her, by attempting to cure her by recommending exerciſe and country air. In the autumn ſhe returned to the city much worſe than when ſhe left it. I was again ſent for, and found her confined to her bed with a pain in her right ſide, but without the leaſt cough or fever. Her pulſe was preternaturally ſlow. She could lie only on her left ſide. She ſometimes complained of acute flying pains in her head, bowels,

THE pneumony terminates in different periods according to the degrees of inflammation, or the nature of the effuſions which take place in the lungs---the ſame obſervation applies to the pulmonary conſumption. The ſymptoms of the different ſpecies of pneumony frequently run into each other; ſo do the ſymptoms of the three ſpecies of conſumption which have been mentioned. In ſhort, the pneumony and conſumption are alike in ſo ma-

bowels, and limbs. About a month before her death, which was on the 3d of May 1787, her pulſe became quick, and ſhe had a little hecking cough, but without any diſcharge from her lungs. Upon my firſt viſit to her in the preceding autumn, I had told her friends that I believed ſhe had an abſceſs in her lungs. The want of fever and cough afterwards however gave me reaſon to ſuſpect that I had been miſtaken. The morning after her death, I received a meſſage from her father, informing me that it had been among the laſt requeſts of his daughter, that the cauſe of her death ſhould be aſcertained by my opening her body. I complied with this requeſt, and in company with Dr. Hall, examined her thorax. We found the left lobe of the lungs perfectly ſound; the right lobe adhered to the pleura, in ſeparating of which, Dr. Hall plunged his hand into a large ſac which contained about half a pint of purulent matter, and which had nearly deſtroyed the whole ſubſtance of the right lobe of the lungs.

I have met with only two other caſes of conſumption in which there was an abſence of a *quick* pulſe. In both of them the pulſe was regular to the laſt day of life.

ny particulars, that they appear to reſemble ſhadows of the ſame ſubſtance. They differ only as the protracted ſhadow of the evening does from that of the noon-day ſun.

I KNOW that it will be objected here that the conſumption is ſometimes produced by ſcrophula, and that this creates an eſſential difference between it and pneumony. I formerly admitted ſcrophula to be one of the *remote* cauſes of the conſumption; but this does not invalidate the parallel which has been given of the two diſeaſes. The phenomena produced in the lungs are the ſame as to their nature, whether they be produced by the remote cauſe of ſcrophula, or by the ſudden action of cold and heat upon them.

No more happens in the caſes of acute and chronic pneumony, than what happens in dyſentery and rheumatiſm. Theſe two laſt diſeaſes are for the moſt part ſo acute, as to confine the patient to his bed or his room, yet we often meet with both of them in patients who go about their ordinary buſineſs, and, in ſome inſtances, carry their diſeaſes with them for two or three years.

THE parallel which has been drawn between the pneumony and conſumption, will enable us to underſtand the reaſon why the latter diſorder terminates in ſuch different periods of time. The leſs it partakes of pneumony, the longer it continues, and vice verſa. What is commonly called in this country a *galloping* conſumption, is a diſeaſe compounded of different degrees of conſumption and pneumony. It terminates frequently in two or three months, and without many of the ſymptoms which uſually attend the laſt ſtage of pulmonary conſumption. But there are caſes in which patients in a conſumption are ſuddenly ſnatched away by an attack of pneumony. I have met with one caſe only, in which, contrary to my expectation, the patient mended after an attack of an acute inflammation of the lungs, ſo as to live two years afterwards.

IT would ſeem from theſe facts, as if nature had preferred a certain gradation in diſeaſes, as well as in other parts of her works. There is ſcarcely a diſeaſe in which there is not a certain number of grades, which mark the diſtance between health and the loweſt ſpecific deviation from it. Each of theſe grades has received different names, and has been conſidered as a diſtinct diſeaſe, but more accurate ſurveys of the animal œco-

nomy have taught us, that they frequently depend upon the ſame original cauſes, and that they are only greater or leſs degrees of the ſame diſeaſe.

I SHALL now proceed to ſay a few words upon the cure of the different ſpecies of pulmonary conſumption. The remedies for this purpoſe are of two kinds, viz. PALLIATIVE and RADICAL. I ſhall firſt mention the palliative remedies which belong to each ſpecies, and then mention thoſe which are alike proper in them all. The palliative remedies for the

I. OR INFLAMMATORY SPECIES, ARE

1. BLOOD-LETTING. It may ſeem ſtrange to recommend this debilitating remedy in a diſeaſe brought on by debility. Were it proper in this place, I could prove that there is no diſeaſe in which bleeding is preſcribed, which is not induced by prediſpoſing debility in commmon with the pulmonary conſumption. I ſhall only remark here, that in conſequence of the exciting cauſe acting upon the ſyſtem (rendered extremely excitable by debility) ſuch a morbid and exceſſive excitement is produced in the arteries as to render a diminution of the ſtimulus of the

the blood, abſolutely neceſſary to reduce it. I have uſed this remedy with great ſucceſs in every caſe of conſumption, attended by a hard pulſe, or a pulſe rendered weak by a laborious tranſmiſſion of the blood through the lungs. In the months of February and March in the year 1781, I bled a Methodiſt miniſter, who was affected by this ſpecies of conſumption, fifteen times in the courſe of ſix weeks. The quantity of blood drawn at each bleeding was never leſs than eight ounces, and it was at all times covered with an inflammatory cruſt. By the addition of country air, and moderate exerciſe, to this copious evacuation, in the enſuing ſpring he recovered his health, ſo perfectly as to diſcharge all the duties of his profeſſion for many years, nor was he ever afflicted afterwards with a diſorder in his breaſt. I have in another inſtance, bled a citizen of Philadelphia eight times in two weeks, in this ſpecies of conſumption, and with the happieſt effects. The blood drawn at each bleeding was always ſizy, and never leſs in quantity than ten ounces. To theſe caſes I might add many others of conſumptive perſons who have been perfectly cured by frequent, and of many others whoſe lives have been prolonged by occaſional bleedings.—But I am ſorry to add, that I could relate many more caſes of conſumptive patients, who have died

martyrs

martyrs to their prejudices againſt the uſe of this invaluable remedy. A common objection to it is, that it has been uſed without ſucceſs in this diſorder. When this has been the caſe, I ſuſpect that it has been uſed in one of the other two ſpecies of pulmonary conſumption which have been mentioned, for it has unfortunately been too faſhionable among phyſicians to preſcribe the ſame remedies in every ſtage and ſpecies of the ſame diſorder; and this I take to be the reaſon why the ſame medicines, which in the hands of ſome phyſicians, are either inert, or inſtruments of miſchief, are, in the hands of others, uſed with more or leſs ſucceſs in every caſe in which they are preſcribed. Another objection to bleeding in the inflammatory ſpecies of conſumption, is derived from the apparent and even ſenſible weakneſs of the patient. The men who urge this objection, do not heſitate to take from ſixty to an hundred ounces of bood from a patient in a pneumony in in the courſe of five or ſix days, without conſidering that the debility in the latter caſe is ſuch as to confine a patient to his bed, while in the former caſe, the patient's ſtrength is ſuch as to enable him to walk about his houſe, and even to attend to his ordinary buſineſs. The difference between the debility in the two diſeaſes, conſiſts in its being *acute* in the one, and *chronic* in the other. It is

true,

true, the preternatural or convulsive action of the arteries is somewhat greater in the pneumony, than in the inflammatory consumption; but the plethora on which the necessity of bleeding is partly founded, is certainly greater in the inflammatory consumption than in pneumony.—This is evident from women, and even nurses, discharging from four to six ounces of menstrual blood every month, while they are labouring with the most inflammatory symptoms of the disorder; nor is it to be wondered at, since the appetite is frequently unimpaired, and the generation of blood continues to be the same, as in perfect health.

Dr. Cullen recommends the use of bleeding in consumptions in order to lessen the inflammation of the ulcers in the lungs, and thereby to dispose them to heal. From the testimonies of the relief which bleeding affords in external ulcers and tumors accompanied by inflammation, I am disposed to expect the same benefit from it in inflamed ulcers and tumors in the lungs: Whether, therefore, we adopt Dr Cullen's theory of consumption, and treat it as a local disease, or assent to the one which I have delivered, still repeated bleedings appear to be equally necessary and useful.

I HAVE ſeen two caſes of inflammatory conſumption, attended by an hœmorrhage of a quart of blood from the lungs. I agreed at firſt with the friends of theſe patients in expecting a rapid termination of their diſorder in death, but to the joy and ſurpriſe of all connected with them, they both recovered. I aſcribed their recovery wholly to the inflammatory action of their ſyſtems being ſuddenly reduced by a ſpontaneous diſcharge of blood. Theſe facts, I hope, will ſerve to eſtabliſh the uſefulneſs of blood-letting in the inflammatory ſtate of conſumption, with thoſe phyſicians who are yet diſpoſed to truſt more to the fortuitous operations of nature, than to the deciſions of reaſon and experience.

I HAVE always found this remedy to be more neceſſary in the winter and firſt ſpring months, than at any other ſeaſon. We obtain by means of repeated bleedings, ſuch a mitigation of all the ſymptoms as enables the patient to uſe exerciſe with advantage as ſoon as the weather becomes ſo dry and ſettled, as to admit of his going abroad every day.

THE relief obtained by bleeding, is ſo certain in this ſpecies of conſumption, that I often uſe it

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as a palliative remedy, where I do not expect it will perform a cure. I was lately made happy in finding, that I am not ſingular in this practice. Dr. Hamilton, of Lynn Regis, uſed it with ſucceſs in a conſumption, which was the effect of a moſt deplorable ſcrophula, without entertaining the leaſt hope of its performing a cure*. In thoſe caſes where inflammatory action attends the laſt ſcene of the diſorder, there is often more relief obtained by a little bleeding than by the uſe of opiates, and it is always a more humane preſcription, in deſperate caſes, than the uſual remedies of vomits and bliſters.

I ONCE bled a ſea captain, whom I had declared to be within a few hours of his diſſolution, in order to relieve him of uncommon pain, and difficulty in breathing. His pulſe was at the ſame time hard. The evacuation, though it conſiſted of only four ounces of blood, had the wiſhed for effect, and his death, I have reaſon to believe, was rendered more eaſy by it. The blood, in this caſe, was covered with a buffy coat.

THE quantity of blood drawn in every caſe of inflammatory conſumption, ſhould be determined by

* Obſervations on ſcrophulous affections.

by the force of the pulſe, and the habits of the patient. I have ſeldom taken more than eight, but more frequently only ſix ounces at a time. It is much better to repeat the bleeding once or twice a week, than to uſe it leſs frequently, but in larger quantities.

From many years experience of the efficacy of bleeding in this ſpecies of conſumption, I feel myſelf authoriſed to aſſert, that where a greater proportion of perſons die of conſumption when it makes it firſt appearance in the lungs, with ſymptoms of inflammatory diatheſis, than die of ordinary pneumonies, (provided exerciſe be uſed afterwards) it muſt in nine caſes out of ten, be aſcribed to the ignorance, or erroneous theories of phyſicians, or to the obſtinacy or timidity of patients.

In ſpeaking thus confidently of the neceſſity and benefits of bleeding in the inflammatory ſpecies of conſumption, I confine myſelf to obſervations made chiefly in the ſtate of Pennſylvania. It is poſſible the inhabitants of European countries and cities, may ſo far have paſſed the ſimple ages of inflammatory diſorders, as never to exhibit thoſe ſymptoms on which I have founded the indication of blood-letting. I am diſpoſed to believe moreover that in moſt of the ſouthern ſtates of America,

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the inflammatory action of the arterial system is of too transient a nature to admit of the repeated bleedings in the consumption which are used with so much advantage in the middle and northern states.

In reviewing the prejudices against this excellent remedy in consumptions, I have frequently wished to discover such a substitute for it as would with equal safety and certainty take down the morbid excitement, and action of the arterial system. I believe in the existence of such a remedy; but until it be discovered, it becomes us to combat the prejudices against bleeding; and to derive all the advantages from it which have been mentioned.

2. A SECOND remedy for the inflammatory species of consumption should be sought for in a MILK and VEGETABLE DIET. In those cases where the milk does not lie easy on the stomach, it should be mixed with water, or it should be taken without its cheesy or oily parts, as in whey, or butter-milk, or it should be taken without skimming; for there are cases in which milk will agree with the stomach in this state, and in no other. The oil of the milk probably helps to promote the solution of its curds in the stomach. It is seldom in the power of physicians to prescribe asses or goats milk in this

this diſorder; but a good ſubſtitute may be prepared for them by adding to cows milk a little ſugar, and a third or fourth part of water, or of a weak infuſio of green tea. The vegetables which are eaten in this ſtate of the diſorder, ſhould contain as little ſtimulus as poſſible. It would ſeem if the moderate portion of ſacharine matter which is contained in certain fruits ſuch as ſtrawberries, grapes, and ſweet apples were peculiarly agreeable and uſeful, for each of theſe fruits has been ſaid to have cured the conſumption. In thoſe caſes where the ſtomach is diſpoſed to dyſpepſia, a little animal food, alſo ſoft boiled eggs, may be taken with ſafety, mixed with vegetable aliment. Where there is no morbid affection of the ſtomach, I have ſeen the white meats eaten without encreaſing the inflammatory ſymptoms of the diſeaſe. The tranſition from a full diet to milk and vegetables ſhould be gradual, and the addition of animal to vegetable aliment, ſhould be made with the ſame caution. From the neglect of this direction, much error, both in theory and practice, has ariſen in the treatment of conſumptions.

In every caſe it will be better for the patient to eat four or five, rather than only two or three meals in a day. A leſs ſtimulus is by this means communicated to the ſyſtem, and leſs chyle is mixed

mixed with the blood in a given time. Of ſo much importance do I conceive this direction to be, that I ſeldom preſcribe for a chronic diſeaſe of any kind without enforcing it.

3. VOMITS have been much commended by Dr. Read in this diſorder. From their indiſcriminate uſe in every ſpecies of conſumption, I am ſatisfied they have oftener done harm than good. In caſes where a patient objects to bleeding, or where a phyſician doubts of its propriety, vomits may always be ſubſtituted in its room with great advantage.

4. NITRE in moderate doſes of ten or fifteen grains taken three or four times a day, has ſometimes done ſervice in this diſorder; but I believe it has been only when the diſeaſe has appeared with inflammatory ſymptoms. Care ſhould be taken not to perſevere too long in the uſe of this remedy as it is apt to impair the appetite. I have known one caſe in which it produced an obſtinate dyſpepſia, and a diſpoſition to the colic; but it removed at the ſame time, the ſymptoms of pulmonary conſumption.

5. COLD and dry air, when combined with the exerciſe of *walking*, deſerves to be mentioned as an antiphlogiſtic remedy. I have repeatedly preſcribed

preſcribed it in this ſpecies of the conſumption with advantage, and have often had the pleaſure of finding a ſingle walk of two or three miles in a clear cold day, produce nearly the ſame diminution of the force and frequency of the pulſe, as the loſs of ſix or eight ounces of blood.

I COME now to treat of the palliative remedies which are proper in the

II. OR HECTIC SPECIES of Conſumption. Here we begin to behold the diſorder in a new and more diſtreſſing form than in the ſpecies which has been deſcribed. There is in this ſpecies of conſumption the ſame complication of inflammatory and typhus diatheſis which occurs in the typhoid and puerperile fevers, and of courſe the ſame difficulty in treating it ſucceſsfully; for the ſame remedies do good and harm, according as the former or latter diatheſis prevails in the ſyſtem.

ALL that I ſhall ſay upon this ſpecies is, that the treatment of it ſhould be accommodated to the predominance of inflammatory or typhus ſymptoms, for the hectic ſpecies preſents each of them alternately every week, and ſometimes every day to the hand or eye of a phyſician. When a hard pulſe with acute pains in the ſide and breaſt occur, bleeding and other remedies for the inflammatory

ſpecies

ſpecies muſt be uſed; but when the diſeaſe exhibits a predominance of typhus ſymptoms, the remedies for that ſpecies to be mentioned immediately, ſhould be preſcribed in moderate doſes. There are ſeveral palliative medicines which have been found uſeful in the hectic ſpecies, but they are ſuch as belong alike to the other two ſpecies; and therefore will be mentioned hereafter in a place aſſigned to them.

I AM ſorry, however, to add, that where bleeding has not been indicated, I have ſeldom been able to afford much relief by medicine in this ſpecies of conſumption. I have uſed alternately the moſt gentle, and the moſt powerful vegetable and metallic tonics to no purpoſe. Even arſenic has failed in my hands of affording the leaſt alleviation of the hectic fever. I conceive the removal of this fever, to be the great deſideratum in the cure of conſumption, and ſhould it be found after all our reſearches to exiſt only in exerciſe, it will be no departure from a law of nature; for I believe there are no diſeaſes of equal degrees of chronic debility, in which medicines are of any more efficacy, than they are in the hectic fever of the pulmonary conſumption.

I PROCEED now to ſpeak of the palliative remedies which are proper in the

III. OR, TYPHUS SPECIES of the Pulmonary Conſumption.

THE firſt of theſe are STIMULATING MEDICINES. However juſt the complaints of Dr. Fothergill may be againſt the uſe of balſams in the inflammatory and mixed ſpecies of conſumption, I am ſatisfied that they are not only ſafe, but uſeful likewiſe in mitigating the ſymptoms of weak action in the arterial ſyſtem. I have therefore frequently preſcribed the balſam of copaivæ, of Peru, the oil of amber, and different preparations of turpentine and tar in moderate doſes with obvious advantage. Garlic, the juice of dandelyon, a ſtrong tea made of horehound, and a decoction of the inner bark of the wild cherry tree;* alſo bitters of all kinds, have all been found ſafe and uſeful tonics in this ſpecies of the conſumption. Even the Peruvian bark itſelf ſo often and ſo generally condemned in conſumptions is always an innocent and frequently an active medicine where there is a total abſence of inflammatory diatheſis in this diſorder. With theſe medicines ſhould be combined

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* Prunus Virginiana.

2. A CORDIAL and STIMUMATING DIET. Milk and vegetables ſo proper in the inflammatory, are improper when taken alone in this ſpecies of conſumption. I believe they often accelerate that decay of appetite and diarrhœa, which form the cloſing ſcene of the diſorder. I think I have ſeen advantages from the uſe, not only of freſh, but of ſalted animal food when preſcribed in the total abſence of inflammatory diatheſis. Oyſters, it has been ſaid, have performed cures of conſumption. If they have, it muſt have been only when they were eaten in that ſpecies of it which is now under conſideration. They are a moſt ſavoury and wholeſome article of diet in all diſeaſes attended with ſymptoms of general debility. I have found the ſame advantage from dividing the meals here that I mentioned under a former head. The exhibition of food in this caſe, ſhould not be left to the calls of appetite, any more than the exhibition of a medicine. Indeed food may be made to ſupply the place of cordial medicines, by keeping up a conſtant and gentle action in the whole ſyſtem. For this reaſon, I have frequently adviſed my patients never to ſuffer their ſtomachs to be empty, even for a ſingle hour. I have ſometimes aimed to keep up the influence of a gentle action in the ſtomach upon the whole ſyſtem, by adviſing them to eat in the night, in order to obviate the increaſe of the

excretion in the lungs and of the cough in the morning, which are brought on in part by the increaſe of debility from the long abſtraction of the ſtimulus of aliment during the night.

However ſafe and even uſeful the cordial medicines and diet which have been mentioned may appear, yet I am ſorry to add, that I have never ſeen any other advantages from them than a mitigation of diſtreſſing ſymptoms, except when they have been combined with ſuitable and long continued exerciſe. Even under this favourable circumſtance, they are often ineffectual; for there frequently occurs in this ſpecies of conſumption, ſuch a deſtruction of the ſubſtance and functions of the lungs, as to preclude the poſſibility of a recovery by the uſe of any of the remedies which have been diſcovered.

I have ſaid formerly that the three ſpecies of conſumption do not obſerve any regular courſe in ſucceeding each other. They are not only complicated in ſome inſtances, but they often appear and diſappear half a dozen times in the courſe of the diſeaſe, according to the influence of the weather, dreſs, diet, and the paſſions, upon the ſyſtem. The great ſecret, therefore, of treating this diſorder conſiſts in accommodating all the remedies that have

have been mentioned to the predominance of either of the three ſpecies, or to the different ſtates of the ſyſtem, as manifeſted chiefly by the pulſe. It is in conſequence of having obſerved the evils which have reſulted from the ignorance or neglect of this practice, that I have ſometimes wiſhed that it were poſſible to aboliſh the ſeducing nomenclature of diſeaſes altogether, in order thereby to oblige phyſicians to conform exactly to the fluctuating ſtate of the ſyſtem in all their preſcriptions; for it is not more certain, that in all cultivated languages, every idea has its appropriate word, than that every ſtate of a diſeaſe has its appropriate doſe of medicine, the knowledge and application of which, can alone conſtitute rational, or enſure uniformly, ſucceſsful practice.

I COME now to ſay a few words upon thoſe palliative remedies which are alike proper in every ſpecies of the Pulmonary Conſumption.

THE firſt Remedy under this head is a DRY SITUATION. A damp air, whether breathed in a room, or out of doors, is always hurtful in every ſpecies of this diſorder. A kitchen or a bed room below the level of the ground has often produced, and never fails to increaſe a pulmonary conſumption. I have often obſerved a peculiar paleneſs,

(the firſt ſymptom of general debility) to ſhew itſelf very early in the faces of perſons who work or ſleep in cellar kitchens or ſhops.

2. Country Air. The higher and dryer the ſituation which is choſen for the purpoſe of enjoying the benefit of this remedy, the better. Situations expoſed to the ſea, ſhould be carefully avoided; for it is a ſingular fact, that while conſumptive perſons are benefited by the ſea air, when they breathe it on the ocean, they are always injured by that portion of it which they breathe on the ſea-ſhore. I ſhall not pauſe to inquire, why a mixture of land and ſea-air is ſo hurtful in the conſumption, and at the ſame time ſo agreeable to perſons in health, and ſo medicinal in many other diſeaſes, but ſhall diſmiſs this head by adding a fact which was communicated to me by Dr. Matthew Irvine of South-Carolina, and that is, That thoſe ſituations which are in the neighbourhood of Bays or Rivers, where the ſalt and freſh waters mix their ſtreams together, are more unfavourable to conſumptive patients than the ſea-ſhore; and therefore ſhould be more carefully avoided by them in exchanging city for country air.

3. Loose

3. LOOSE DRESSES, AND A CAREFUL ACCOMMODATION OF THEM TO THE CHANGES IN THE WEATHER. Many facts might be mentioned to shew the influence of compression and of tight ligatures of every kind, upon the different parts of the body; also of too much, or too little cloathing, in producing, or increasing diseases of every kind, more especially those which affect the lungs. Tight stays, garters, waistbands, and collars, should all be laid aside in the consumption, and the quality of the cloathing should be suited to the weather. A citizen of Maryland informed me, that he had twice had a return of a cough and spitting of blood, by wearing his summer cloaths a week after the weather became cool in the month of September. But it is not sufficient to vary the weight or quality of dress with the seasons. It should be varied with the changes which take place in the temperature of the air every day, even in the summer months, in middle latitudes. I know a citizen of Philadelphia, who has laboured under a consumptive diathesis near thirty years, who believes that he has lessened the frequency and violence of pulmonic complaints during that time, by a careful accommodation of his dress to the weather. He has been observed frequently to change his waistcoat and short cloaths twice or three times in a day, in a summer month.

A REPETITION of colds, and thereby an increaſe of the diſorder, will be prevented by wearing flannel next to the ſkin in winter, and muſlin in the ſummer, either in the form of a ſhirt or a waiſtcoat: where theſe are objected to, a piece of flannel, or of ſoft ſheepſkin, ſhould be worn next to the breaſt. They not only prevent colds, but frequently remove chronic pains from that part of the body.

4. ARTIFICIAL EVACUATIONS by means of BLISTERS and ISSUES. I ſuſpect the uſefulneſs of theſe remedies to be chiefly confined to the inflammatory and hectic ſpecies of conſumption. In the typhus ſpecies, the ſyſtem is too weak to ſuſtain the diſcharges of either of them. Freſh bliſters ſhould be preferred to ſuch as are perpetual, and the iſſues, to be uſeful ſhould be large. They are ſuppoſed to afford relief by diverting a preternatural ſecretion and excretion of mucus or pus from the lungs, to an artificial emunctory in a leſs vital part of the body.

5. CERTAIN FUMIGATIONS and VAPORS. An accidental cure of a pulmonary affection by the ſmoke of roſin, in a man who bottled liquors, raiſed for a while the credit of the firſt of thoſe remedies. I have tried it, but without much permanent effect

effect. I think I have seen the pain in the breast relieved by receiving the vapor from a mixture of equal parts of tar, bran, and boiling water into the lungs. The sulphureous and saline air of Stabiæ, between Mount Vesuvius and the Mediterranean sea, and the effluvia of the pine forests of Lybia, were supposed in ancient times to be powerful remedies in consumptive complaints; but it is probable, the exercise used in travelling to those countries, contributed chiefly to the cures which were ascribed to foreign matters acting upon the lungs.

6. Lozenges, Syrups, and Demulcent Teas. These are too common and too numerous to be mentioned.

7. Opiates. It is a mistake in practice, founded upon a partial knowledge of the qualities of opium, to administer it only at night, or to suppose that its effects in composing a cough, depend upon its inducing sleep. It should be given in small doses during the day, as well as in larger ones at night. The dose should be proportioned to the degrees of action in the arterial system. The less this action, the more opium may be taken with safety and advantage.

8. Dif-

8. DIFFERENT POSITIONS OF THE BODY have been found to be more or less favourable to the abatement of the cough. These positions should be carefully sought for, and the body kept in that which procures the most freedom from coughing. I have heard of an instance, in which a cough which threatened a return of an hœmorrhage from the lungs, was perfectly composed for two weeks, by keeping the patient nearly in one posture in bed; but I have known more cases in which relief from coughing was to be obtained only by an erect posture of the body.

9. CONSIDERABLE relief will often be obtained from the patient's SLEEPING BETWEEN BLANKETS in winter, and on a MATRASS in summer. The former prevent fresh colds from night sweats; the latter frequently checks them altogether. In cases, where a sufficient weight of blankets, to keep up an agreeable warmth, cannot be borne without restraining easy and full acts of inspiration,—the patient should sleep under a light feather bed, or an eider down coverlit. They both afford more warmth than double or treble their weight of blankets.

HOWEVER comfortable this mode of producing warmth in bed may be, it does not protect the lungs

lungs from the morbid effects of the distant points of temperature of a warm parlour in the day time, and a cold bed-chamber at night. To produce an equable temperature of air at all hours, I have frequently advised my patients, where going to a warm climate, was not practicable, to pass their nights as well as days in an open stove room, in which nearly the same degrees of heat were kept up at all hours. I have found this practice, in several cases, a tolerable substitute for a warm climate.

10. THE MODERATE use of the lungs, in READING, PUBLIC SPEAKING, LAUGHING, and SINGING. The lungs, when debilitated, derive equal benefit with the limbs, or other parts of the body, from moderate exercise. I have mentioned in another place* several facts which support this opinion. But too much pains cannot be taken to inculcate upon our patients, to avoid all *excess* in the use of the lungs, by *long*, or *loud* reading—speaking—or singing—or by sudden and violent *bursts* of laughter. I shall long lament the death of a female patient, who had discovered many hopeful signs of a recovery from a consumption, who relapsed

* An account of the effects of common salt in the cure of hæmoptysis.

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relapſed, and died in conſequence of burſting a blood-veſſel in her lungs, by a ſudden fit of laughter.

11. ARE there any advantages to be derived from the excitement of certain PASSIONS in the treatment of conſumptions? Dr. Blane tells us, that many conſumptive perſons were relieved, and that ſome recovered, in conſequence of the terror which was excited by a hurricane in Barbadoes, in the year 1780. It will be difficult to imitate, by artificial means, the accidental cures which are recorded by Dr. Blane; but we learn enough from them to inſpire the invigorating paſſions of hope and confidence in the minds of our patients, and to recommend to them ſuch exerciſes as produce exertions of body and mind analogous to thoſe which are produced by terror. Van Swieten and Smollet relate cures of conſumptions, by patients falling into ſtreams of cold water. Perhaps in both inſtances, the cures were performed only by the fright and conſequent exertion produced by the fall. This is only one inſtance out of many which might be mentioned, of partial and unequal action being ſuddenly changed into general and equal excitement in every part of the ſyſtem. The cures of conſumptions which have been performed by

by a camp life*, have probably been much assisted by the commotions in the passions which were excited by the various and changing events of war.

Before I proceed to speak of the radical cure of the consumption, it will be necessary to observe, that by means of the palliative remedies which have been mentioned, many persons have been recovered, and some have had their lives prolonged by them for many years. In all these cases I have found, upon inquiry, that the disorder was attended with but little general debility, and that it frequently recurred as soon as the patient left off the use of his remedies, unless it were prevented by necessary or voluntary exercise.

It is truly surprising to observe how long some persons have lived, who have been affected by a consumptive diathesis, and by frequent attacks of many of the most troublesome symptoms of this disorder. Van Swieten mentions the case of a man, who had lived thirty years in this state. Morton relates the history of a man, in whom the symptoms of consumption appeared with but little variation or abatement from his early youth till the 70th year of his age; and Bennet says, he knew

* Medical Inquiries and Observations.

knew an inſtance of this diſorder which continued ſixty years. I preſcribed for one of my pupils four and twenty years ago, in a conſumption, who, during the greateſt part of the time that has elapſed ſince, has ſeldom paſſed a year without ſpitting blood, nor a week without coughing, who now enjoys a tolerable ſhare of health. In this caſe, the fatal tendency of the diſorder was conſtantly oppoſed by rural exerciſes, by a cordial, but temperate diet, and (during the abſence of inflammatory action in his pulſe) by the occaſional uſe of Peruvian bark.

I AM led here to mention another inſtance of the analogy between pneumony and the pulmonary conſumption. We often ſee the ſame frequency of recurrence of both diſorders in habits which are prediſpoſed to them. I have attended a German citizen of Philadelphia, in ſeveral fits of the pneumony, who has been confined to his bed eight and twenty times, by the ſame diſorder, in the courſe of the ſame number of years. He has, for the moſt part, enjoyed good health in the intervals of thoſe attacks, and always appeared, till lately, to poſſeſs a good conſtitution. In the caſes of the frequent recurrence of pneumony, no one has ſuſpected the diſeaſe to have originated in a morbid ſtate of the lungs; on the contrary, it appears

pears evidently to be produced by the *ſudden* influence of the ſame cauſes, which by acting with leſs force, and for a *longer* time, produce the pulmonary conſumption. The name of pneumony is taken from the principal ſymptom of this diſorder, but it is as certainly a diſeaſe of the whole arterial ſyſtem as the conſumption; and I add further, that it is as certainly produced by general prediſpoſing debility. The hardneſs and fulneſs of the pulſe do not militate againſt this aſſertion, for they are altogether the effects of a morbid and convulſive excitement of the ſanguiferous ſyſtem. The ſtrength manifeſted by the pulſe is moreover partial, for every other part of the body diſcovers, at the ſame time, ſigns of extreme debility.

It would be eaſy, by purſuing this ſubject a little further, to mention a number of facts which, by the aid of principles in phyſiology and pathology, which are univerſally admitted, would open to us a new theory of fevers, but this would lead us too far from the ſubject before us. I ſhall only remark, that all that has been ſaid of the influence of *general* debilitating cauſes upon the lungs, both in pnuemony and conſumption, and of the alternation of the conſumption with other general diſeaſes, will receive great ſupport from conſidering the lungs only as a part of the whole external ſurface of the body

body, upon which moſt of the remote and exciting cauſes of both diſeaſes produce their firſt effects. This extent of the ſurface of the body, not only to the lungs, but to the alimentary canal, was firſt taken notice of by Dr. Boerhaave; but was unhappily neglected by him in his theories of the diſeaſes of the lungs and bowels. Dr. Keil ſuppoſes, that the lungs, from the peculiar ſtructure of the bronchial veſſels, and air veſicles, expoſe a ſurface to the action of the air, equal to the extent of the whole external and viſible ſurface of the body.

Thus have I mentioned the uſual palliative remedies for the conſumption. Many of theſe remedies have, under certain circumſtances, been ſaid to have cured the diſeaſe, but I ſuſpect that ſuch cures have taken place only when the diſorder has partaken of an intermediate nature between a pnuemony and a true pulmonary conſumption. Such connecting ſhades appear between the extreme points of many other diſeaſes. In a former eſſay,* I endeavoured to account for the tranſmutation (if I may be allowed the expreſſion) of the pneumony into the conſumption, by aſcribing it

* Inquiry into the diſeaſes and remedies of the Indians of North America; and a comparative view of their diſeaſes and remedies with thoſe of civilized nations. P. 43.

it to the increaſe of the debilitating refinements of civilized life. This opinion has derived conſtant ſupport from every obſervation I have made connected with this ſubject, ſince its firſt publication, in the year 1772.

I COME now to treat of the RADICAL REMEDIES for the pulmonary conſumption.

In an eſſay formerly alluded to*, I mentioned the effects of labour, and the hardſhips of a camp or naval life, upon this diſorder. As there muſt frequently occur ſuch objections to each of thoſe remedies, as to forbid their being recommended or adopted, it will be neceſſary to ſeek for ſubſtitutes for them in the different ſpecies of exerciſe. Theſe are, *active*, *paſſive*, and *mixed*. The *active*, includes walking, and the exerciſe of the hands and feet in working or dancing. The *paſſive* includes rocking in a cradle, ſwinging, ſailing, and riding in carriages of different kinds. The *mixed* is confined chiefly to riding on horſe-back.

I HAVE mentioned all the different ſpecies of exerciſe, not becauſe I think they all belong to the claſs

* Thoughts upon the pulmonary conſumption. Med. Inq. and Obſervations.

claſs of radical remedies for the conſumption, but becauſe it is often neceſſary to uſe thoſe which are paſſive, before we recommend thoſe of a mixed or active nature. That phyſician does not err more who adviſes a patient to take phyſic, without ſpecifying its qualities and doſes, than the phyſician does who adviſes a patient, in a conſumption, to uſe exerciſe, without ſpecifying its ſpecies and degrees. From the neglect of this direction, we often find conſumptive patients injured inſtead of being relieved by exerciſes, which, if uſed with judgment, might have been attended with the happieſt effects.

I HAVE before ſuggeſted that the ſtimulus of every medicine, which is intended to excite action in the ſyſtem, ſhould always be in an exact ratio to its excitability. The ſame rule ſhould be applied to the ſtimulus of exerciſe. I have heard a well atteſted caſe of a young lady, upon whoſe conſumption the firſt ſalutary impreſſion was made by rocking her in a cradle; and I know another caſe in which a young lady, in the loweſt ſtate of that debility which precedes an affection of the lungs, was prepared for the uſe of the mixed and active exerciſes, by being firſt moved gently backwards and forwards in a chariot without horſes, for an hour every day. Swinging appears to act

in the ſame gentle manner. In the caſe of a gardiner, who was far advanced in a conſumption, in the Pennſylvania hoſpital, I had the pleaſure of obſerving its good effects, in an eminent degree. It ſo far reſtored him, as to enable him to complete his recovery by working at his former occupation.

In caſes of extreme debility, the following order ſhould be recommended in the uſe of the different ſpecies of exerciſe.

1. Rocking in a cradle, or riding on an elaſtic board—commonly called a chamber horſe.

2. Swinging.

3. Sailing.

4. Riding in a carriage.

5. Riding on horſeback.

6. Walking.

7. Running—Dancing, &c.

In the uſe of each of thoſe ſpecies of exerciſe great attention ſhould be paid to the *degree* or *force* of action with which they are applied to the body.

For example,—in riding in a carriage, the exercise will be less in a four-wheel carriage than in a single horse chair, and less when the horses move in a walking, than a trotting gait. In riding on horseback, the exercise will be less or greater according as the horse walks, paces, canters, or trots, in passing over the ground.

I HAVE good reason to believe, that an English sea captain, who was on the verge of the grave with the consumption, in the spring of the year 1790, owed his perfect recovery to nothing but the above gradual manner, in which, by my advice, he made use of the exercises of riding in a carriage and on horseback. I have seen many other cases of the good effects of thus accommodating exercise to debility; and I am sorry to add, that I have seen many cases in which from the neglect of this manner of using exercise, most of the species and degrees of it, have either been useless, or done harm. However carelessly this observation may be read by physicians, or attended to by patients, I conceive no direction to be more necessary in the cure of consumptions. I have been thus particular in detailing it, not only because I believe it to be important, but that I might atone to society for that portion of evil which I might have prevented

by

by a more ſtrict attention to it in the firſt years of my practice.

THE more the arms are uſed in exerciſe the better. One of the proprietary governors of Pennſylvania, who laboured for many years under a conſumptive diatheſis, derived great benefit from frequently rowing himſelf in a ſmall boat, a few miles up and down the river Schuilkill. Two young men, who were prediſpoſed to a conſumption, were perfectly cured by working ſteadily at a printing preſs in this city. Perhaps the ſuperior advantages of riding on horſeback, in this diſorder, may ariſe in part from the conſtant and gentle uſe of the arms in the management of the bridle and the whip.

MUCH has been ſaid in favour of ſea voyages in conſumptions. In the mild degrees of the diſorder they certainly have done ſervice,—but I ſuſpect the relief given, or the cures performed by them, ſhould be confined chiefly to ſeafaring people, who add to the benefits of a conſtant change of pure air, a ſhare of the invigorating exerciſes of navigating the ſhip. I have frequently heard of conſumptive patients reviving at ſea, probably from the tranſient effects of ſea ſickneſs upon the whole ſyſtem, and growing worſe as ſoon as they

came near the end of their voyage. It would ſeem as if the mixture of land and ſea airs was hurtful to the lungs in every ſituation and condition in which it could be applied to them. Nor is this peculiar and morbid operation of land and ſea airs upon the human body confined only to conſumptive people. I croſſed the Atlantic ocean in the year 1766, with a ſea captain, who announced to his paſſengers the agreeable news that we were near the Britiſh coaſt before any diſcovery had been made of our ſituation by ſounding, or by a change in the colour of the water. Upon aſking him upon what he founded his opinion,—he ſaid, that he had been ſneezing, which he added, was the ſign of an approaching cold, and that in the courſe of upwards of twenty years, he had never made the land (to uſe the ſeaman's phraſe) without being affected in a ſimilar manner. I have viſited many ſick people in Philadelphia ſoon after their arrival from ſea, who have informed me, that they had enjoyed good health during the greateſt part of their voyage, and that they had contracted their indiſpoſitions after they came within ſight of the land. I mention theſe facts only to ſhew the neceſſity of adviſing conſumptive patients, who undertake a ſea voyage for the recovery of their health, not to expoſe themſelves upon deck in the morning and at night, after they arrive within the region

gion in which the mixture of the land and ſea airs may be ſuppoſed to take place.

I SUBSCRIBE, from what I have obſerved, to the bold declaration of Dr. Sydenham, in favor of the efficacy of *riding on horſeback*, in the cure of conſumption. I do not think the exiſtence of ulcers, or even tubercles in the lungs, when recent, or of a moderate ſize, the leaſt objection to the uſe of this excellent remedy. Ulcers in the lungs are not neceſſarily fatal, and tubercles have no malignity in them which ſhould render their removal impracticable by this ſpecies of exerciſe. The firſt queſtion, therefore, to be aſked by a phyſician who viſits a patient in this diſorder ſhould be, not, what is the ſtate of his lungs, but, is he able to ride on horſeback.

THERE are two methods of riding for health in this diſorder. The firſt is by ſhort excurſions; the ſecond is, by long journies. In ſlight conſumptive affections, and after a recovery from an acute illneſs, ſhort excurſions are ſufficient to remove the exiſting debility; but in the more advanced ſtages of conſumption, they are ſeldom effectual, and frequently do harm by exciting an occaſional appetite without adding to the digeſtive powers. They moreover keep the ſyſtem conſtantly

ſtantly vibrating by their unavoidable inconſtancy, between diſtant points of tone and debility *, and they are unhappily accompanied at all times from the want of a ſucceſſion of freſh objects to divert the mind, by the melancholy reflection that they are the ſad, but neceſſary conditions of life.

In a conſumption of long continuance or of great danger, long journies on horſe back are the the moſt effectual modes of exerciſe. They afford a conſtant ſucceſſion of freſh objects and company, which divert the mind from dwelling upon the danger of the exiſting malady; they are moreover attended by a conſtant change of air, and they are not liable to be interrupted by company, or tranſient changes in the weather, by which means appetite and digeſtion, action and power all keep pace with each other. It is to be lamented that the uſe of this excellent remedy is frequently oppoſed by indolence and narrow circumſtances in both ſexes, and by the peculiarity of ſituation and temper in the female ſex. Women are attached to their families by ſtronger ties than men. They cannot travel alone. Their delicacy, which is increaſed

* The bad effects of *inconſtant* exerciſe have been taken notice of in the gout. Dr. Sydenham ſays, when it is uſed only by fits and ſtarts in this diſorder, it does harm.

creaſed by ſickneſs, is liable to be offended at every ſtage,—and laſtly, they ſooner relax in their exertions to prolong their lives than men. Of the truth of the laſt obſervation, Sir William Hamilton has furniſhed us with a ſtriking illuſtration. He tells us, that in digging into the ruins produced by the late earthquake in Calabria, the women who periſhed in it, were all found with their arms folded as if they had abandoned themſelves immediately to deſpair and death; whereas, the men were found with their arms extended, as if they had reſiſted their fate to the laſt moment of their lives. It would ſeem from this fact, and many others of a ſimilar nature which might be related; that a capacity of bearing pain and diſtreſs with fortitude and reſignation, was the diſtinguiſhing characteriſtic of the female mind; while a diſpoſition to reſiſt and overcome evil belonged in a more peculiar manner to the mind of man. I have mentioned this peculiarity of circumſtances and temper in female patients, only for the ſake of convincing phyſicians that it will be neceſſary for them to add all the force of eloquence to their advice, when they recommend journies to women in preference to all other remedies, for the recovery of their health.

Persons, moreover, who purſue active employments, frequently object to undertaking journies, from an opinion that their daily occupations are ſufficient to produce all the ſalutary effects we expect from artificial exerciſe. It will be highly neceſſary to correct this miſtake, by aſſuring ſuch perſons that, however uſeful the habitual exerciſe of an active, or even a laborious employment may be to *preſerve* health, it muſt always be exchanged for one which excites new impreſſions, both upon the mind and body in every attempt to *reſtore* the ſyſtem from that debility which is connected with pulmonary conſumption.

As travelling is often rendered uſeleſs, and even hurtful in this diſeaſe from being purſued in an improper manner, it will be neceſſary to furniſh our patients with ſuch directions as will enable them to derive the greateſt benefit from their journies. I ſhall therefore, in this place, mention the ſubſtance of the directions which I have given in writing for many years to ſuch conſumptive patients as undertake journies by my advice.

1. To *Avoid Fatigue.* Too much cannot be ſaid to enforce this direction. It is the hinge on which the recovery or death of a conſumptive patient frequently turns. I repeat it again, therefore,

fore, that patients ſhould be charged over and over when they ſet off on a journey, as well as when they uſe exerciſe of any kind to avoid fatigue. For this purpoſe, they ſhould begin by travelling only a few miles in a day, and increaſe the diſtance of their ſtages as they increaſe their ſtrength. By neglecting this practice, many perſons have returned from journies much worſe than when they left home, and many have died in taverns, or at the houſes of their friends on the road. Travelling in ſtage-coaches is ſeldom ſafe for a conſumptive patient. They are often crouded; they give too much motion; and they afford by their ſhort delays and diſtant ſtages, too little time for reſt, or for taking the frequent refreſhment which was formerly recommended.

2. To *Avoid travelling too ſoon in the Morning*, and after the *Going down of the Sun in the Evening*; and if the weather be hot, never to travel in the middle of the day. The ſooner a patient breakfaſts after he leaves his bed the better; and in no caſe ſhould he leave his morning ſtage with an empty ſtomach.

3. If it ſhould be neceſſary for a patient to lie down, or to ſleep in the day time, he ſhould be adviſed to *undreſs* himſelf, and to cover his body be-

between ſheets or blankets. The uſual ligatures of garters, ſtocks, kneebands, waiſtcoats and ſhoes, are very unfriendly to ſound ſleep; hence perſons who lie down with their cloaths on, often awake from an afternoon's nap in terror from dreams, or in a profuſe ſweat, or with a head-ach or ſick ſtomach; and generally out of humor. The ſurveyors are ſo ſenſible of the truth of this remark, that they always undreſs themſelves when they ſleep in the woods. An intelligent gentleman of this profeſſion informed me that he had frequently ſeen young woodſmen who had refuſed to conform to this practice, ſo much indiſpoſed in the morning, that after the experience of a few nights, they were forced to adopt it.

GREAT care ſhould be taken in ſleeping, whether in the day time, or at night, never to lie down in damp ſheets. Dr. Sydenham excepts the danger from this quarter, when he ſpeaks of the efficacy of riding on horſeback in curing the conſumption.

4. PATIENTS who travel for health in this diſorder ſhould avoid all *large companies*, more eſpecially *evening* and *night parties*. The air of a contaminated room, phlogiſticated by the breath of fifteen or twenty perſons, and by the ſame number of

of burning candles, is poiſon to a conſumptive patient. To avoid impure air from every other ſource, he ſhould likewiſe avoid ſleeping in a crouded room, or with curtains around his bed, and even with a bed-fellow.

5. TRAVELLING, to be effectual in this diſorder, ſhould be conducted in ſuch a manner as that a patient may eſcape the *extremes* of *heat* and *cold*. For this purpoſe he ſhould paſs the winter, and part of the ſpring in Georgia or South-Carolina, and the ſummer in New Hampſhire, Maſſachuſetts, or Vermont, or if he pleaſes, he may ſtill more effectually ſhun the ſummer heats by croſſing the lakes, and travelling along the ſhores of the St. Lawrence to the city of Quebec. He will thus eſcape the extremes of heat and cold, particularly the leſs avoidable one of heat; for I have conſtantly found the hot month of July to be as unfriendly to conſumptive patients in Pennſylvania, as the variable month of March. By theſe means too he will enjoy nearly an equable temperature of air in every month of the year; and his ſyſtem will be free from the inconvenience of the alternate action of heat and cold upon it. The autumnal months ſhould be ſpent in New-Jerſey or Pennſylvania,

In

In theſe journies from north to ſouth, or from ſouth to north, he ſhould be careful, for reaſons before mentioned, to keep at as great a diſtance as poſſible from the ſea coaſt. Should this inquiry fall into the hands of a Britiſh phyſician, I would beg leave to ſuggeſt to him, whether more advantages would not acrue to his conſumptive patients from adviſing them to croſs the Atlantic ocean, and afterwards to purſue the tour which I have recommended, than by ſending them to Portugal, France, or Italy——Here they will arrive with ſuch a mitigation of the violence of the diſorder, in conſequence of the length of their ſea voyage, as will enable them immediately to begin their journies on horſeback. Here they will be expoſed to fewer temptations to intemperance, or to unhealthy amuſements, than in old European countries. And, laſtly, in the whole courſe of this tour, they will travel among a people related to them by a ſameneſs of language and manners, and by ancient or modern ties of citizenſhip. Long journies for the recovery of health under circumſtances ſo agreeable, ſhould certainly be preferred to travelling among ſtrangers of different nations, languages, and manners on the continent of Europe.

6. To render travelling on horſeback effectual in a conſumption, it ſhould be continued with moderate

derate intervals from *ſix to twelve months*. But the cure ſhould not be reſted upon a ſingle journey. It ſhould be repeated every *two* or *three years*, till our patient has paſſed the conſumptive ſtages of life. Nay,—he muſt do more, he muſt acquire a *habit* of riding conſtantly, both at home and abroad, or to uſe the words of Dr. Fuller "he muſt, like a Tartar, learn to live on horſeback, by which means he will acquire in time the conſtitution of a Tartar*."

WHERE benefit is expected from a change of climate, as well as from travelling, patients ſhould reſide at leaſt two years in the place which is choſen for that purpoſe. I have ſeldom known a reſidence for a ſhorter time in a foreign climate do much ſervice.

To ſecure a perfect obedience to medical advice, it would be extremely uſeful if conſumptive patients could always be acompanied by a phyſician. Celſus ſays, he found it more eaſy to cure the dropſy in ſlaves than in freemen, becauſe they more readily ſubmitted to the reſtraints he impoſed upon their appetites. Madneſs has become a curable diſorder in England, ſince the phyſicians of that country have opened private mad-houſes, and

* Medicina Gymnaſtica, p. 116.

and have taken the entire and conſtant direction of their patients into their own hands. The ſame ſucceſsful practice would probably follow the treatment of conſumptions, if patients were conſtantly kept under the eye and authority of their phyſicians.——The keenneſs of appetite, and great ſtock of animal ſpirits, which thoſe perſons frequently poſſeſs, hurry them into many exceſſes which defeat the beſt concerted plans of a recovery ;—or, if they eſcape theſe irregularities, they are frequently ſeduced from our directions by every quack remedy which is recommended to them. Unfortunately the cough becomes a ſignal of their diſorder, at every ſtage of their journey, and the eaſy or pleaſant preſcriptions of even hoſtlers and ferrymen, are often ſubſtituted to the ſelf-denial and exertion which have been impoſed by phyſicians. The love of life in theſe caſes ſeems to level all capacities ; for I have obſerved perſons of the moſt cultivated underſtandings to yield in common with the vulgar to the uſe of theſe preſcriptions.

I CANNOT conclude this inquiry without adding, that the author of it derived from his paternal anceſtors a prediſpoſition to the pulmonary conſumption, and that between the 18th and 43d years of his age, he has occaſionally been afflicted

with many of the ſymptoms of that diſorder which he has deſcribed:—By the conſtant and faithful uſe of moſt of the remedies which he has recommended, he has enjoyed for ſeveral years nearly an uninterrupted exemption from pulmonary complaints. In humble gratitude, therefore, to that BEING, who condeſcends to be called the preſerver of men, he thus publicly devotes the reſult of his experience and inquiries to the benefit of ſuch of his fellow creatures as may be afflicted with the ſame diſorder, ſincerely wiſhing that they may be as uſeful to them, as they have been to the author.

OBSERVATIONS

ON THE

SYMPTOMS AND CURE

OF

DROPSIES.

OBSERVATIONS, &c.

WHETHER we admit the exhaling and abſorbing veſſels to be affected in general dropſies by preternatural debility—palſy—or rupture, or by a retrograde motion of their fluids, it is certain that their exhaling and abſorbing power is materially affected by too much, or too little action in the arterial ſyſtem. That too little action in the arteries ſhould favour dropſical effuſions, has been long obſerved, but it has been leſs obvious that the ſame effuſions are ſometimes promoted, and their abſorption prevented, by too much action in theſe veſſels. That this fact ſhould have eſcaped our notice, is the more remarkable, conſidering how long we have been accuſtomed to ſeeing ſerous ſwellings in the joints in the acute

rheumatiſm, and copious, but partial effuſions of water in the form of ſweat, in every ſpecies of inflammatory fever.

It is nothing new that the healthy action of one part, ſhould depend upon the healthy action of another part of the ſyſtem. We ſee it in many of the diſeaſes of the nerves and brain. The tetanus is cured by exciting a tone in the arterial ſyſtem; madneſs is cured by leſſening the action of the arteries by copious bloodletting, and epilepſy and hyſteria are often mitigated by the moderate uſe of the ſame remedy.

By too much action in the arterial ſyſtem, I mean a certain morbid excitement in the arteries, accompanied by preternatural force, which is obvious to the ſenſe of touch. It differs from the morbid excitement of the arteries, which takes place in inflammatory fevers, in being of a leſs irregular or convulſive nature, and in being attended by leſs febrile heat, and with little or no pain in the head or limbs. The thirſt is nearly the ſame in this ſpecies of dropſy, as in inflammatory fevers. I include here thoſe dropſies only in which the whole ſyſtem is affected by what is called an hydropic diatheſis.

That

THAT debility ſhould, under certain circumſtances, diſpoſe to exceſſive action, and that exceſſive action ſhould occur in one part of the body, at the ſame time that debility prevailed in every other, are abundantly evident from the hiſtory and phænomena of many diſeaſes. Inflammatory fever, active hæmorrhages, tonic gout, aſthma, apoplexy, and palſy, however much they are accompanied by exceſſive action in the arterial ſyſtem, are always preceded by original debility, and are always accompanied by obvious debility in every other part of the ſyſtem.

BUT it has been leſs obſerved by phyſicians that an undue force or exceſs of action occurs in the arterial ſyſtem in certain dropſies, and that the ſame theory which explains the union of prediſpoſing and nearly general debility, with a partial excitement and preternatural action in the arterial ſyſtem, in the diſeaſes before mentioned, will explain the ſymptoms and cure of certain dropſies.

THAT debility prediſpoſes to every ſpecies of dropſy, is evident from the hiſtory of all the remote and occaſional cauſes which produce them. It will be unneceſſary to mention theſe cauſes, as they are to be found in all our ſyſtems of phyſic. Nor will it be neceſſary to mention any proofs of the exiſtence of debility in nearly every part of the body.

body. It is too plain to be denied. I ſhall only mention the ſymptoms which indicate a morbid excitement and preternatural action in the arterial ſyſtem. Theſe are

1. A *hard*, *full*, and quick pulſe. Thi ympt om I believe, is more common in dropſies than is generally ſuppoſed, for many phyſicians viſit and exexamine patients in theſe diſorders, without feeling the pulſe. Dr. Home mentions the *frequency* of the pulſe, in the patients whoſe cures he has recorded,* but he takes no notice of its force except in two caſes. Dr. Zimmerman, in his account of the dropſy which terminated the life of the late king of Pruſſia, tells us that he found his pulſe *hard* and *full*. I have repeatedly found it full and hard in every ſpecies of dropſy, and more eſpecially in the firſt ſtage of the diſorder. Indeed I have ſeldom found it otherwiſe in the beginning of the dropſy of the breaſt.

2. Sizy blood. This has been taken notice of by many practical writers, and has very juſtly been aſcribed under certain circumſtances of bloodletting, to an exceſſive action of the veſſels upon the blood.

3. Al-

* Medical Facts.

3. ALTERNATION *of dropſies with certain diſeaſes which were evidently accompanied by exceſs of action in the arterial ſyſtem.* I have ſeen anaſarca alternate with vertigo, and both aſcites and anaſarca alternate with tonic madneſs. A caſe of nearly the ſame kind is related by Dr. Mead.

4. THE *occaſional connection of certain dropſies with diſeaſes evidently of an inflammatory nature*, particularly pneumony, rheumatiſm, and gout.

5. SPONTANEOUS *hæmorrhages*, from the lungs, hæmorrhoidal veſſels, and noſe, caſes of which ſhall be mentioned hereafter, when we come to treat of the cure of dropſies.

6. THE *appearance of dropſies in the winter and ſpring, in habits previouſly affected by the intermitting fever.* The debility produced by this ſpecies of fever, frequently diſpoſes to inflammatory diatheſis, as ſoon as the body is expoſed to the alternate action of heat and cold, nor is this inflammatory diatheſis always laid aſide, by the tranſition of the intermitting fever into a dropſy, in the ſucceeding cold weather.

7. THE *injurious effects of ſtimulating medicines in certain dropſies*, prove that there exiſts in them,

at times, too much action in the blood veſſels. Dr. Tiſſot, in a letter to Dr. Haller, "De Vario-"lis, apoplexia, et hydrope," condemns in ſtrong terms, the uſe of opium in the dropſy. Now the bad effects of this medicine in dropſies, muſt have ariſen from its having been given in caſes of too much action in the arterial ſyſtem; for opium, we know, increaſes, by its ſtimulating qualities, the action and tone of the blood veſſels, and hence we find, it has been preſcribed with ſucceſs in dropſies of too little action in the ſyſtem.

But the exiſtence of too much action in the arterial ſyſtem in certain dropſies, will appear more fully from the hiſtory of the effects of the remedies which have been employed either by deſign or accident in the cure of theſe diſorders. I ſhall firſt mention the remedies which have been uſed with ſucceſs in tonic dropſies; and afterwards mention thoſe which have been given with ſucceſs in dropſies of a contrary ſtate of the ſyſtem. I have conſtantly purpoſed to treat only of the theory and cure of dropſies in general, without ſpecifying any of the numerous names it derives from the different parts of the body in which they may be ſeated; but in ſpeaking of the remedies which have been uſed with advantage in both the tonic and atonic ſpecies, I ſhall occaſionally mention the name

or

or ſeat of the dropſy in which the remedy has done ſervice.

The Iſt. Remedy that I ſhall mention for dropſies is *Blood Letting*. Dr. Hoffman and Dr. Home both cured dropſies accompanied by pulmonic congeſtion by means of this remedy. Dr. Monroe quotes a caſe of dropſy from Sponius, in which bleeding ſucceeded, but not till after it had been uſed twenty times*. Mr. Cruikſhank relates a caſe† of accidental bleeding, which confirms the efficacy of blood-letting in theſe diſorders. He tells us that he attended a patient with dropſical ſwellings in his legs, who had had a hoarſeneſs for two years. One morning in ſtooping to buckle his ſhoes, he burſted a blood-veſſel in his lungs, from which he loſt a quart of blood; in conſequence of which, both the ſwellings and the hoarſeneſs went off gradually, and he continued well two years afterwards. I have known one caſe in which ſpontaneous hæmorrhages from the hæmorrhoidal veſſels, and from the noſe, ſuddenly reduced univerſal dropſical ſwellings. In this patient there had been an uncommon tenſion and fullneſs in the pulſe.

To

* Treatiſe on the Dropſy.

† Treatiſe on the Lymphatics.

To theſe facts, I can with pleaſure add, that I have cured one perſon of aſcites, and three of anaſarca, (in the courſe of the three laſt years) by means of blood-letting. It has been uſed with equal ſucceſs by Dr. Rawlings, of Maryland, in a caſe of anaſarca which had reſiſted nitre, and other powerful medicines commonly preſcribed for that diſorder.

In thoſe deplorable caſes of Hydrothorax, which do not admit of a radical cure, I have given temporary relief, and thereby protracted life by taking away occaſionally a few ounces of blood.—Had Dr. Zimmerman uſed this remedy in the caſe of the king of Pruſſia, I cannot help thinking from the account which the Doctor gives us of the diet, and pulſe of his royal patient, that he would have leſſened his ſufferings much more than by plentiful doſes of dandelyon; for I take it for granted, from the candor and integrity which the Doctor diſcovered in all his viſits to the king, that he did not expect that dandelyon, or any other medicine would cure him.

Although a *full* and *tenſe* pulſe is always an indication of the neceſſity of bleeding; yet I can eaſily conceive there may be ſuch congeſtions, and ſuch a degree of ſtimulus to the arterial ſyſtem,

as

as to produce indirect debility, and a *low* or *weak* pulse. Two cases of this kind are related by Dr. Monroe, one of which was cured by bleeding. The same symptom of a low and weak pulse is often met with in the *first* stage of pneumony, and apoplexy, and is only to be removed by the plentiful use of the same remedy.

II. Vomits have often been given with advantage in dropsies. Dr. Home says, that squills were useful in these disorders only when they produced a vomiting. The ultimate action of vomits is certainly debilitating; but in producing a diminution of excitement and action in the arterial system, they dispose the lymphatics to absorb and discharge large quantities of water.——The efficacy of vomits in promoting the absorption of stagnating fluids is not confined to dropsies. Mr. Hunter was once called to visit a patient in whom he found a bubo in such a state that he purposed to open it the next day. In the mean while, the patient went on board of a vessel where he was severely affected by sea-sickness and vomiting; in consequence of which the bubo disappeared, and the patient recovered without the use of the knife.

Mr.

Mr. Cruikshank further mentions a caſe* of a ſwelling in the knee being nearly cured by a patient vomiting eight and forty hours in conſequence of his taking a large doſe of the ſalt of tartar inſtead of ſoluble tartar.

III. Purges. The efficacy of this remedy in the cure of dropſies, has been acknowledged by phyſicians in all ages and countries. Jalap, calomel, ſcammony and gamboge, are often preferred for this purpoſe; but I have heard of two caſes of aſcites being cured by a table ſpoonful of ſweet oil taken every day. It probably acted only as a gentle laxative. The cream of tartar ſo highly commended by Dr. Home, ſeems to act *chiefly* in the ſame way. Gherlius, from whom Dr. Home learned the uſe of this medicine, ſays, that all the perſons whom he cured by it were in the vigor of life, and that their diſeaſes had been only of a few months continuance. From theſe two circumſtances, it is moſt probable they were dropſies of exceſſive action in the arterial ſyſtem. He adds further that the perſons who were cured by this medicine, were reduced very low by the uſe of it. Dr. Home ſays that it produced the ſame effect upon the patients whom he cured by it, in the Infirmary

* Letter to Mr. Clare, p. 166.

firmary of Edinburgh. Dr. Sydenham prefers gentle to draſtic purges, and recommends the exhibition of them every day. Both draſtic and gentle purges act by diminiſhing the action of the arterial ſyſtem, and thereby promote the abſorption and diſcharge of water. That purges promote abſorption, we learn not only from their effects in dropſies, but from an experiment related by Mr. Cruikſhank *, of a man who acquired ſeveral ounces of weight after the operation of a purge. The abſorption in this caſe was from the atmoſphere. So great is the effect of purges in promoting abſortion, that Mr. Hunter ſuppoſes the matter of a gonorrhœa, or of topical venereal ulcers to be conveyed by them in ſome inſtances into every part of the body.

IV. *Certain Medicines*, which by leſſening the *action of the arterial ſyſtem*, favour the abſorption and evacuation of water. The only medicines of this claſs which I ſhall name are *nitre*, *cream of tartar*, and *foxglove*.

1. Two ounces of nitre diſſolved in a pint of water, and a wine-glaſs full of it taken three times a-day have performed perfect cures, in two caſes of aſcites, which have come under my notice. I think

* Letter to Mr. Clare, p. 117.

think I have cured two perſons of anaſarca, by giving one ſcruple of the ſame medicine three times a-day for ſeveral weeks. The two laſt cures were evidently dropſies of too much action in the arterial ſyſtem. Where nitre has been given in atonic dropſies it has generally been uſeleſs, and ſometimes done harm. I have ſeen one inſtance of an incurable diarrhœa after tapping, which I ſuſpected aroſe from the deſtruction of the tone of the ſtomach and bowels, by large and long continued doſes of nitre, which the patient had previouſly taken by the advice of a perſon who had been cured by that remedy. To avoid this, or any other inconvenience from the uſe of nitre in dropſies, it ſhould be given at firſt in ſmall doſes, and ſhould always be laid aſide, if it ſhould prove ineffectual after having been given two or three weeks.

2. I CAN ſay nothing of the efficacy of cream of tartar in dropſies from my own experience, where it has not acted as a purge. Perhaps my want of deciſion upon this ſubject has ariſen only from my not having perſiſted in the uſe of it for the ſame length of time which is mentioned by Dr. Home.

3. THERE has been much inquiry into the manner in which foxglove acts in curing dropſies. It has been ſuppoſed to exert a ſpecific action on

the kidneys as a diuretic; but I am rather disposed to believe, that it acts only by lessening the action of the arterial system by a sedative quality which appears to reside in it. I am led to adopt this opinion by the facts which are related by Dr. Darwin, who says, that he had seen it do service in the dropsy, without producing any immediate dicharge of water, and that it seldom succeeded until it had previously debilitated the body.

Dr. Warren says, that he seldom found tonics necessary after he had discharged the water in the dropsy by this medicine, probably because he reduced the arterial system by it, from an excessive to a healthy state of action. And even Dr. Withering, who supposes the foxglove to be improper in plethoric habits, confesses that tonics, after its use "very often deceived his expectations," probably by reproducing the same morbid and excessive action in the arterial system, which he had just before removed by means of the foxglove. I am the more disposed to adopt this opinion of the manner in which this medicine acts, from observing the good effects which are ascribed to it in vertigo—madness—hœmorrhages*—and pulmonary consumption, when these diseases are accompanied

* Ferriar.

accompanied by too much action in the arterial system.

THERE are different opinions concerning the efficacy of this medicine in dropsies. From the the cases related by Dr. Withering, it appears to have done good; but from those related by Dr. Lettsom* it seems to have done harm. I suspect the different accounts of those two gentlemen have arisen from their having given it in different states of the system. In dropsies of too much action, I believe it has sometimes been used with success, but in atonic dropsies, I am satisfied that it is not only an useless but a dangerous medicine. I am sorry to add further, that after many trials of this medicine I have failed in most of the cases in which I have given it. I have discharged the water in three instances by it, but the disease returned, and my patients finally died.—I can ascribe only one complete cure to its use which was in the year 1789, in a young man in the Pennsylvania hospital, of five and thirty years of age, of a robust habit, and plethoric pulse.

WHERE medicines have once been in use, and afterwards fall into disrepute, as was the case with the

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* Medical Memoirs, vol. II.

the Foxglove, I ſuſpect the caſes in which they were uſeful, to have been either few or doubtful, and that the caſes in which they had done harm, were ſo much more numerous and unequivocal, as juſtly to baniſh them from the materia medica.

V. HARD LABOR, or exerciſe in ſuch a degree as to produce fatigue, have in ſeveral inſtances cured the dropſy. A diſpenſary patient in this city was cured of this diſorder by ſawing wood, And a patient in an aſcites under my care in the Pennſylvania hoſpital, had his belly reduced ſeven inches in circumference in one day, by the labor of carrying wood from the yard into the hoſpital. A ſecond patient belonging to the Pennſylvania Diſpenſary was cured by walking to Lancaſter, 66 miles from the city, in the middle of winter. The efficacy of travelling in this diſorder in cold weather, is taken notice of by Dr. Monroe, who quotes a caſe from Dr. Haller, of a French merchant, who was cured of a dropſy by a journey from Paris to England, in the winter ſeaſon. It would ſeem, that in theſe two caſes, the *cold* co-operated as a ſedative with the fatigue produced by labor or exerciſe, in reducing the tone of the arterial ſyſtem.

VI. Low Diet. I have heard of a woman who was cured of a dropsy by eating nothing but boiled beans for three weeks, and drinking nothing but the water in which they had been boiled. Many other cases of the good effects of low diet in dropsies are to be found on the records of medicine.

VII. Thirst. This cruel remedy acts by debilitating the system in two ways; 1st, By abstracting the stimulus of distention; and, 2dly, By preventing a fresh supply of water to replace that which is discharged by the ordinary emunctories of nature.

VIII. Fasting. An accidental circumstance related by Sir John Hawkins, in the life of Dr. Johnson, first led me to observe the good effects of fasting in the dropsy. If the fact alluded to stood alone under the present head of this essay, it would be sufficient to establish the existence of too much action, and the efficacy of debilitating remedies in certain dropsies. I am the more disposed to lay a good deal of stress upon this fact, as it was the clue which conducted me out of the labyrinth of empirical practice, in which I had been bewildered for many years, and finally led me to adopt the principles and practice which I am now endeavoring to establish. The passage which contains

tains this intereſting fact is as follows. " A few " days after (ſays Sir John) he [meaning Dr. John- " ſon] ſent for me, and informed me, that he had " diſcovered in himſelf the ſymptoms of a dropſy, " and indeed, his very much increaſed bulk, and " the ſwollen appearance of his legs, ſeemed to " indicate no leſs. It was on Thurſday that I " had this converſation with him, in the courſe " thereof, he declared that he intended to devote " the whole of the next day to *faſting*, humilia- " tion, and ſuch other devotional exerciſes as be- " came a man in his ſituation. On the Saturday " following I made him a viſit, and upon entering " his room, I obſerved in his countenance ſuch a " ſerenity as indicated, that ſome remarkable criſis " of his diſorder had produced a change in his " feelings. He told me, that purſuant to the reſo- " lution he had mentioned to me, he had ſpent the " preceding day in an abſtraction from all worldly " concerns—that to prevent interruption he had in " the morning ordered *Frank*, [his ſervant] not to " admit any one to him, and the better to enforce the " charge, had added theſe awful words, *for your " maſter is preparing himſelf to die.* He then men- " tioned to me, that in the courſe of this exer- " ciſe he found himſelf relieved from the diſorder " which had been growing upon him, and was " becoming very oppreſſive, viz. the *dropſy*, by

" the gradual evacuation of water, to the amount " of *twenty pints*, a like inſtance whereof he had " never before experienced." Sir John Hawkins aſcribes this immenſe diſcharge of water to the influence of Dr. Johnſon's prayers; but he neglects to take notice, that theſe prayers were anſwered in this inſtance, as they are in many others, in a perfect conſiſtence with the common and eſtabliſhed laws of nature.

To ſatisfy myſelf that this diſcharge of water, in the caſe of Dr. Johnſon, was produced by the faſting only, I recommended it ſoon after I read the above account to a gentlewoman whom I was then attending in an aſcites. I was delighted with the effects of it. Her urine, which for ſome time before had not exceeded half a pint a-day, amounted to *two quarts* on the day ſhe faſted. I repeated the ſame preſcription once a week for ſeveral weeks, and each time was informed of an increaſe of urine, though it was conſiderably leſs in the laſt experiments than in the firſt. Two patients in an aſcites, to whom I preſcribed the ſame remedy, in the Pennſylvania Hoſpital, the one in the winter of 1790, and the other in the winter of 1792, exhibited proofs in the preſence of many of the ſtudents of the univerſity, equally ſatisfactory of the

the efficacy of faſting in ſuddenly increaſing the quantity of urine.

IX. Fear. This paſſion is evidently of a debilitating nature, and therefore, it has frequently afforded an accidental aid in the cure of dropſies, of too much action. I ſuſpect, that the fear of death, which was ſo diſtinguiſhing a part of the character of Dr. Jonhſon, added a good deal to the efficacy of faſting, in procuring the immenſe diſcharge of water beforementioned. In ſupport of the efficacy of fear ſimply applied, in diſcharging water from the body in dropſies, I ſhall mention the following facts.

In a letter which I received from Dr. John Pennington, dated Edinburgh, Auguſt 3. 1790, I was favoured with the following communication. "Since the converſation I had with you on the ſubject of the dropſy, I feel more and more inclined "to adopt your opinion. I can furniſh you with "a fact which I learned from a Daniſh ſailor, on "my paſſage to this country, which is much in favor of your doctrine. A ſailor in an aſcites, fell "off the end of the yard into the ſea; the weather being calm, he was taken up unhurt, but to "uſe the ſailor's own words, who told me the "ſtory, he was *frightened half to death*, and as "ſoon

" ſoon as he was taken out of the water, he diſ-
" charged a gallon of urine or more. A doctor on
" board aſcribed this large evacuation to ſea bath-
" ing, and accordingly ordered the man to be
" dipped in the ſea every morning, much againſt
" his will, for my informant adds, that he had not
" forgotten his fall, and that in four weeks he was
" perfectly well. I think this fact can only be
" explained on your principles. The ſedative
" operation of *fear*, was no doubt the cauſe of his
" cure*."

Dr. Hall, of York-town in Pennſylvania, informed me, that he had been called to viſit a young woman of 19 years of age, who had taken all the uſual remedies for aſcites without effect. He at once propoſed to her the operation of tapping. To this ſhe objected, but ſo great was the *fear* of this operation, which the propoſal of it ſuddenly excited in her mind, that it brought on a plentiful diſcharge of urine, which in a few days perfectly removed her diſorder.

On

* There is an account of an aſcites being cured by a fall from an open chaiſe recorded in the third volume of the medical Memoirs by Mr. Lowdell. I have heard of a complete recovery from dropſy, having ſuddenly followed a fall from a horſe. In both theſe caſes may not fear have contributed very much to the cures?

On the 27th of Auguſt, 1790, I viſited a gentlewoman in this city with the late Dr. Jones, in an aſcites. We told her for the firſt time, that ſhe could not be relieved without being tapped. She appeared to be much terrified upon hearing our opinion, and ſaid that ſhe would conſider of it. I ſaw her two days afterwards, when ſhe told me with a ſmile on her countenance, that ſhe hoped ſhe ſhould get well without tapping, for that ſhe had diſcharged two quarts of water in the courſe of the day after we had adviſed her to ſubmit to that operation. For many days before, ſhe had not diſcharged more than two or three gills in twenty-four hours. The operation, notwithſtanding, was ſtill indicated, and ſhe ſubmitted to be tapped a few days afterwards.

I TAPPED the ſame gentlewoman a ſecond time in January 1791. She was much terrified while I was preparing for the operation, and fainted immediately after the puncture was made. The ſecond time that I viſited her after the operation was performed, ſhe told me (without being interrogated on that ſubject) that ſhe had diſcharged a pint and an half of urine, within twenty minutes after I left the room on the day I tapped her. What made this diſcharge the more remarkable

was

was, ſhe had not made more than a table ſpoonful of water in a day for ſeveral days before ſhe was tapped.

I HAVE ſeen ſimilar diſcharges of urine in two other caſes of tapping which have come under my notice, but they reſembled ſo nearly thoſe which have been mentioned, that it will be unneceſſary to record them.

BUT the influence of fear upon the ſyſtem in the dropſy, extends far beyond the effects which I have aſcribed to it. Dr. Currie, of this city, informed me that he called about four years ago, by appointment to tap a woman. He no ſooner entered the room than he obſerved her, as he thought, to faint away. He attempted to recover her, but to no purpoſe. She died of a ſudden paroxyſm of fear.

IT is a matter of ſurpriſe, that we ſhould have remained ſo long ignorant of the influence of fear upon the urinary organs in dropſies, after having been ſo long familiar with the ſame effect of that paſſion in the hyſteria.

IN recommending the antiphlogiſtic treatment of certain dropſies, I muſt here confine myſelf to the dropſies of ſuch climates as diſpoſe to diſeaſes

diſeaſes of too much action in the ſyſtem. I am ſatisfied that it will often be proper in the middle and eaſtern ſtates of America; and I have lately met with two obſervations, which ſhew that it has been uſed with ſucceſs at Vienna in Germany. Dr. Stoll tells us, that in the month of January, 1780, "Hydropic and aſthmatic patients diſcover-"ed more or leſs marks of inflammatory diatheſis, "and that blood was drawn from them with a ſpa-"ring hand with advantage;" and in the month of November of the ſame year, he ſays, "The "ſtronger diuretics injured dropſical patients in "this ſeaſon; but an antiphlogiſtic drink, compo-"ſed of a quart of the decoction of graſs, with "two ounces of ſimple oxymel, and nitre and "cream of tartar of each a drachm did ſervice."* It is probable that the ſame difference ſhould be obſerved between the treatment of dropſies in warm and cold climates that is obſerved in the treatment of inflammatory fevers. The tonic action probably exiſts in the ſyſtem in both countries. In the former it reſembles the tides which are ſuddenly produced by a ſhower of rain, and as ſuddenly diſappear; whereas, in the latter, it may be compared to thoſe tides which are produced by the flow and gradual

* Ratio Medendi Noſocomio Practico Vindobonenſi. Vol. iv. p. 56 and 99.

gradual addition of water from numerous ſtreams, and which continue for days and weeks together to exhibit marks of violence in every part of their courſe.

I COME now to ſay a few words upon Atonic Dropſies. They may eaſily be diſtinguiſhed from thoſe which have been deſcribed, by occurring in habits naturally weak; by being produced by the operation of chronic cauſes; by a weak and quick pulſe, and by little or no preternatural heat or thirſt.

THE Remedies for Atonic Dropſies are all ſuch ſtimulating ſubſtances as increaſe the action of the arterial ſyſtem, or determine the fluids to the urinary organs. Theſe are,

I. BITTER and AROMATIC ſubſtances of all kinds exhibited in ſubſtance or in infuſions of wine, ſpirit, beer or water.

II. CERTAIN ACRID VEGETABLES, ſuch as ſcurvy-graſs, horſe-radiſh, muſtard, water-creſſes, and garlic. I knew an old man who was perfectly cured of an anaſarca, by eating water-creſſes, on bread and butter.

III.

III. Opium. The efficacy of this medicine in dropſies has been atteſted by Dr. Willis, and ſeveral other practical writers. It ſeems to poſſeſs almoſt an excluſive power of acting alike upon the arterial, the lymphatic, the glandular, and the nervous ſyſtems.

IV. Metallic Tonics, ſuch as chalybeate medicines of all kinds, and the mild preparations of copper and mercury. I once cured an incipient aſcites and anaſarca by large doſes of the ruſt of iron; and I have cured many dropſies by giving mercury in ſuch quantities as to excite a plentiful ſalivation. I have, it is true, often given it without effect, probably from my former ignorance of the tonic action of the arteries, which ſo frequently occurs in dropſies, and in which caſes, mercury muſt neceſſarily have done harm.

V. Diuretics, conſiſting of alkaline ſalts, nitre, and the oxymels of ſquills and colchicum. It is difficult to determine how far theſe medicines produce their ſalutary effects by acting directly upon the kidneys. It is remarkable that theſe organs are ſeldom affected in dropſies, and that their diſeaſes are rarely followed by dropſical effuſions in any part of the body.

VI.

VI. Generous Diet, conſiſting of animal food, rendered cordial by ſpices; alſo ſound old wine.

VII. Diluting Drinks taken in ſuch large quantites as to excite the action of the veſſels by the ſtimulus of diſtention. This effect has been produced, Sir George Baker informs us, by means of large draughts of ſimple water, and of cyder and water*. The influence of diſtention in promoting abſorption is evident in the urinary and gall bladders, which frequently return their contents to the blood by the lymphatics, when they are unable to diſcharge them through their uſual emunctories. Is it not probable that the diſtention produced by the large quantities of liquids which we are directed to adminiſter after giving the foxglove, may have been the means of performing ſome of thoſe cures of dropſies, which have been aſcribed to that remedy?

VIII.

* The remark upon this fact by Sir George, is worthy of notice, and implies much more than was probably intended by it. "When common means have failed, ſucceſs has "ſometimes followed a method *directly contrary* to the eſta-"bliſhed practice."——Medical Tranſactions, Vol. II.

VIII. PRESSURE. Bandages bound tightly around the belly and limbs, sometimes prevent the increase or return of dropsical swellings. The influence of pressure upon the action of the lymphatics appears in the absorption of bone which frequently follows the pressure of contiguous tumors, also in the absorption of flesh which follows the long pressure of certain parts of the body upon a sick bed.

IX. FRICTIONS, either by means of a dry, or oiled hand, or with linen or flannel impregnated with volatile and other stimulating substances. I have found evident advantages from following the advice of Dr. Cullen, by rubbing the lower extremities *upwards*, and that only in the *morning*.—— I have been at a loss to account for the manner in which sweet oil acts when applied to dropsical swellings. If it act by a sedative power upon the blood-vessels, it will be more proper in tonic than atonic dropsies; but if it act by closing the pores, and thereby preventing the absorption of moisture from the air, it will be very proper in the species of dropsy which is now under consideration. It is in this manner that Dr. Cullen supposes that sweet oil, when applied to the body, cures that species of diabetes in which nothing but insipid water is discharged from the bladder.

X. HEAT applied either ſeparately or combined with moiſture in the form of warm or vapor baths, has often been uſed with ſucceſs in dropſies of too little action. Dampier in his voyage round the world was cured of a dropſy by means of a copious ſweat excited by burying himſelf in a bed of warm ſand. Warm fomentations to the legs rendered moderately ſtimulating by the addition of ſaline or aromatic ſubſtances, have often done ſervice in the atonic dropſical ſwellings of the lower extremities.

XI. THE COLD-BATH. I can ſay nothing in favor of the efficacy of this remedy in dropſies, from my own experience. Its good effects ſeem to depend wholly on its encreaſing the excitability of the ſyſtem to common ſtimuli, by the diminution of its excitement. If this be the caſe, I would aſk, whether FEAR might not be employed for the ſame purpoſe, and thus become as uſeful in atonic, as it was formerly proved to be in tonic dropſies.

XII. WOUNDS, whether excited by cutting inſtruments, or by fire, provided they excite inflammation, and action in the arteries, frequently cure atonic dropſies. The good effects of inflammation, and action in theſe caſes appear in the cure of hydrocele by means of the needle, or the cauſtic.

XIII.

XIII. EXERCISE. This is probably as neceſſary in the atonic dropſy, as it is in the conſumption, and ſhould never be omitted when a patient is able to take it. The paſſive exerciſes of ſwinging, and riding in a carriage are moſt proper in the loweſt ſtage of the diſorder; but as ſoon as the patient's ſtrength will admit of it, he ſhould ride on horſeback. A journey ſhould be preferred in this diſorder, to ſhort excurſions from home.

IN the application of each of the remedies which has been mentioned for the cure of both tonic and atonic Dropſies, great care ſhould be taken to uſe them in ſuch a manner, as to accommodate them to the ſtrength and excitability of the patient's ſyſtem. The moſt powerful remedies have often been rendered *hurtful* by being given in too large doſes in the beginning; and *uſeleſs* by being given in too ſmall doſes, in the ſubſequent ſtages of the diſorder.

I HAVE avoided ſaying any thing of the uſual operations for diſcharging water from different parts of the body, as my deſign was to treat only of the ſymptoms and cure of thoſe dropſies which affect the whole ſyſtem. I ſhall only remark, that if tapping and punctures have been more ſucceſsful in the early, than in the late ſtage of theſe diſorders,

it is probably becauſe the ſudden or gradual evacuation of water takes down that exceſſive action in the arterial ſyſtem, which is moſt common in their early ſtage, and thereby favours the ſpeedy reſtoration of healthy action in the exhaling or lymphatic veſſels.

THUS have I endeavoured to prove, that two diſtinct and oppoſite ſtates of action take place in dropſies, and have mentioned the remedies which are proper for each of them under ſeparate heads. But I ſuſpect that dropſies are often connected with a certain intermediate or mixed action in the arterial ſyſtem analogous to the typhoid action which takes place in certain fevers. I am led to adopt this opinion, not only from having obſerved mixed action to be ſo univerſal in moſt of the diſeaſes of the arterial and nervous ſyſtem, but becauſe I have ſo frequently obſerved dropſical ſwellings to follow the ſcarlatina, and the puerperile fever, two diſeaſes which appear to derive their peculiar character from a mixture of exceſs and deficiency of *force*, combined with irregularity of action in the arterial ſyſtem. In dropſies of mixed action where too much force prevails in the action of ſome, and too little in the action of other of the arterial fibres, the remedies muſt be debilitating or ſtimulating,

cording to the greater or leſs predominance of tonic or atonic diatheſis in the arterial ſyſtem.

I SHALL conclude this hiſtory of dropſies, and of the different and oppoſite remedies which have cured them, by the following obſervations.

WE learn, in the firſt place, from what has been ſaid, the impropriety and even danger of preſcribing ſtimulating medicines indiſcriminately in every caſe of dropſy.

2. WE are taught by the facts which have been mentioned, the reaſon why phyſicians have differed ſo much in their accounts of the ſame remedies, and why the ſame remedies have operated ſo differently in the hands of the ſame phyſicians. It is becauſe they have been given without a reference to the two different ſtates of the ſyſtem, which have been deſcribed. Dr. Sydenham ſays, that he cured the firſt dropſical patient he was called to, by frequent purges. He began to exult in the diſcovery, as he thought, of a certain cure for dropſies, but his triumph was of ſhort duration. The ſame remedy failed in the next caſe in which he preſcribed it. The reaſon probably was, the dropſy in the firſt caſe, was of a tonic, but in the ſecond, of an atonic nature; for the latter was an aſcites from a quartan ague. It is agreeable, however, to diſcover, from the theory of dropſies which has been laid down, that all the different remedies

for theſe diſorders have been proper in their nature, and improper only in the ſtate of the ſyſtem in which they have been given. As the diſcovery of truth in religion reconciles the principles of the moſt oppoſite ſects; ſo the diſcovery of truth in medicine, reconciles the moſt oppoſite modes of practice. It would be happy if the inquirers after truth in medicine ſhould be taught by ſuch diſcoveries, to treat each other with tenderneſs and reſpect, and to wait with patience till accident, or time, ſhall combine into one perfect and conſiſtent ſyſtem, all the contradictory facts and opinions about which phyſicians have been ſo long divided.

3. If a ſtate of exceſſive action in the arteries has been demonſtrated in dropſies, both from its ſymptoms and remedies, and if theſe dropſies are evidently produced by previous debility, who will deny the exiſtence of exceſſive action in certain hæmorrhages, in gout, palſy, apoplexy, and madneſs, notwithſtanding they are all the offspring of predisposing debility? And who will deny the efficacy of bleeding, purges, and other debilitating medicines in certain ſtates of thoſe diſorders, that has ſeen the ſame medicines adminiſtered with ſucceſs in certain dropſies? To reject bleeding, purging, and the other remedies for exceſſive action in the ſyſtem, in either of the above diſeaſes, becauſe that action was preceded by general debility,

will

will lead us to reject them in the most acute inflammatory fevers, for these are as much the offspring of previous debility as dropsies or palsy. The previous debility of the former, differs from that of the latter diseases, only in being of a more acute, or, in other words, of a shorter duration.

4. From the symptoms of tonic dropsy which have been mentioned, it follows, that the distinction of apoplexy into serous and sanguineous, affords no rational indication for a difference in the mode of treating that disorder. If an effusion of serum in the thorax, bowels, or limbs, produce a hard and full pulse, it is reasonable to suppose that the same symptom will be produced by the effusion of serum in the brain. But the dissections collected by Lieutaud,* place this opinion beyond all controversy. They prove that the symptoms of too much, and too little action, as they appear in the pulse, follow alike the effusion of serum and blood in the brain. This fact will admit of an important application to the disease, which is to be the subject of the next inquiry.

5. From the influence which has been described, of the different states of action of the arterial system, upon the lymphatic vessels, in dropsies, we are led to reject the indiscriminate use of bark,

* Historia Anatomico Medica. Vol. ii.

mercury, and ſalt water, in the ſcrophula. When the action of the arteries is weak, thoſe remedies are proper; but when an oppoſite ſtate of the arterial ſyſtem occurs, and above all, when ſcrophulous tumours are attended with inflammatory ulcers, ſtimulating medicines of all kinds are hurtful. By alternating the above remedies with a milk and vegetable diet, according to the tonic, or atonic ſtates of the arterial ſyſtem, I have lately ſucceeded in a caſe of ſcrophula, attended by large ulcers in the inguinal glands, which had for ſeveral years reſiſted the conſtant uſe of the three ſtimulating remedies which have been mentioned.

6. NOTWITHSTANDING I have ſuppoſed dropſies to be connected with a peculiar ſtate of force in the blood veſſels, yet I have not ventured to aſſert, that dropſies may not exiſt from an excluſive affection of the exhaling and abſorbing veſſels. I conceive this to be as poſſible, as for a fever to exiſt from an excluſive affection of the arteries, or an hyſteria, from an excluſive affection of the nervous ſyſtem. Nothing, however, can be ſaid upon this ſubject, until phyſiology and pathology have taught us more of the ſtructure and diſeaſes of the lymphatic veſſels. Nor have I ventured further to aſſert, that there are not medicines which may act ſpecifically upon the lymphatics independently of the arteries.

This

This, I conceive to be as poſſible as for aſſafœtida to act chiefly upon the nerves, or ipecacuana and jalap upon the alimentary canal, without affecting other parts of the ſyſtem. Until ſuch medicines are diſcovered, it becomes us to avail ourſelves of the acceſs to the lymphatics, which is furniſhed us through the medium of the arteries by means of moſt of the remedies which have been mentioned.

7. If it ſhould appear hereafter, that we have leſſened the mortality of certain dropſies by the theory and practice which have been propoſed, yet many caſes of dropſy muſt ſtill occur in which they will afford us no aid. The caſes I allude to, are dropſies from encloſing cyſts, from the oſſification of certain arteries, from ſchirri of certain viſcera, from large ruptures of exhaling or lymphatic veſſels, from a peculiar and corroſive acrimony of the fluids, and laſtly, from an exhauſted ſtate of the whole ſyſtem. The records of medicine furniſh us with inſtances of death from each of the above cauſes. But let us not deſpair. It becomes a phyſician to believe, that there is no diſeaſe neceſſarily incurable; and that there exiſt in the womb of time, certain remedies for all thoſe diſorders which elude the preſent limits of the healing art.

AN

INQUIRY

INTO THE

CAUSES AND CURE

OF THE

INTERNAL DROPSY OF THE BRAIN.

INQUIRY, &c.

HAVING for many years been unſucceſsful in all the caſes, except two, of internal dropſy of the brain, which came under my care, I began to entertain doubts of the common theory of this diſorder, and to ſuſpect that inſtead of being conſidered as an idiopathic dropſy, the effuſion of water ſhould be conſidered only as the effect of a primary inflammation or congeſtion of blood in the brain.

I MENTIONED this opinion to my colleague Dr. Wiſtar in the month of June 1788, and taught it the winter following in my lectures. The year afterwards I was confirmed in it by hearing that the ſame

ſame idea had occurred to Dr. Quin. I have ſince read Dr. Quin's treatiſe on the dropſy of the brain with great pleaſure, and conſider it as the firſt dawn of light which has been ſhed upon the theory of this diſorder. In purſuing this ſubject, therefore, I ſhall avail myſelf of Dr. Quin's diſcoveries, and endeavour to arrange the facts and obſervations I have collected in ſuch a manner, as to form a connected theory from them, which I hope will lead to a new and more ſucceſsful mode of treating this diſeaſe.

I SHALL begin this Inquiry by delivering a few general propoſitions.

1. THE Internal Dropſy of the Brain is a diſorder confined chiefly to children.

2. IN children the brain is larger in proportion to other parts of the body, than it is in adults; and of courſe a greater proportion of blood is ſent to it in childhood, than in the ſubſequent periods of life.—The effects of this determination of blood to the brain appear in the mucous diſcharge from the noſe, and in the ſores on the head and behind the ears, which are ſo common in childhood.

3. IN

3. In all febrile diſeaſes there is a preternatural determination of blood to the brain. This occurs in a more eſpecial manner in children; hence the reaſon why they are ſo apt to be affected by convulſions in the eruptive fever of the ſmall-pox, in dentition, in the diſeaſes from worms, and in the firſt paroxyſm of intermitting fevers.

4. In fevers of every kind, and in every ſtage of life, there is a diſpoſition to effuſion in that part to which there is the greateſt determination. Thus in inflammatory fever, effuſions take place in the lungs and in the joints. In the bilious fever they occur in the liver, and in the gout in every part of of the body. The matter effuſed is always influenced by the ſtructure of the part in which it takes place.

These propoſitions being premiſed, I ſhould have proceeded to mention the remote cauſes of this diſorder; but as this inquiry may poſſibly fall into the hands of ſome gentlemen who may not have acceſs to the deſcription of it as given by Dr. Whytt, Dr. Fothergill, and Dr. Quin, I ſhall introduce a hiſtory of its ſymptoms taken from the laſt of thoſe authors. I prefer it to the hiſtories by Dr. Whytt and Dr. Fothergill, as it accords moſt with

with the ordinary phænomena of this diſorder in this country.

"In general the patient is at firſt languid and "inactive, often drowſy and peeviſh, but at inter- "vals cheerful and apparently free from complaint. "The appetite is weak, a nauſea, and in many caſes "a vomiting occurs once or twice in the day, and "the ſkin is obſerved to be hot and dry towards "the evenings: ſoon after theſe ſymptoms have "appeared, the patient is affected with a ſharp "head-ach, chiefly in the fore-part, or if not there, "generally in the crown of the head: it is ſome- "times, however, confined to one ſide of the head, "and, in that caſe, when the poſture of the body "is erect, the head often inclines to the ſide "affected. We frequently find alſo, that the head- "ach alternates with the affection of the ſtomach; "the vomiting being leſs troubleſome when the "pain is moſt violent, and *vice verſâ*; other parts "of the body are likewiſe ſubject to temporary at- "tacks of pain, viz. the extremities, or the bow- "els, but more conſtantly the back of the neck, "and between the ſcapulæ; in all ſuch caſes the "head is more free from uneaſineſs.

"The patient diſlikes the light at this period; "cries much, ſleeps little, and when he does ſleep, "he grinds his teeth, picks his noſe, appears to be "un-

" uneasy, and starts often, screaming as if he were
" terrified; the bowels are in the majority of ca-
" ses very much confined, though it sometimes
" happens that they are in an opposite state: the
" pulse in this early stage of the disorder, does not
" usually indicate any material derangement.

" When the symptoms above mentioned have
" continued for a few days, subject as they always
" are in this disease to great fluctuation, the axis of
" one eye is generally found to be turned in to-
" wards the nose; the pupil on this side is rather
" more dilated than the other; and when both
" eyes have the axes directed inwards, (which
" sometimes happens,) both pupils are larger than
" they are observed to be in the eyes of healthy
" persons: the vomiting becomes more constant,
" and the head-ach more excruciating; every
" symptom of fever then makes its appearance,
" the pulse is frequent, and the breathing quick;
" exacerbations of the fever take place towards
" the evening, and the face is occasionally flushed;
" usually one cheek is much more affected than
" the other; temporary perspirations likewise
" break forth, which are not followed by any al-
" leviation of distress; a discharge of blood from

" the

" the noſe, which ſometimes appears about this " period, is equally inefficacious.

" DELIRIUM, and that of the moſt violent kind, " particularly if the patient has arrived at the age " of puberty, now takes place, and with all the " preceding ſymptoms of fever, continues for a " while to increaſe, until about fourteen days, " often a much ſhorter ſpace of time ſhall have " elapſed ſince the appearance of the ſymptoms, " which were firſt mentioned in the above detail.

" THE diſeaſe then undergoes that remarkable " change, which ſometimes ſuddenly points out " the commencement of, what has been called its " ſecond ſtage: the pulſe becomes ſlow but une- " qual, both as to its ſtrength, and the intervals " between the pulſations; the pain of the head; " or of whatever part had previouſly been affected, " ſeems to abate, or at leaſt the patient becomes " apparently leſs ſenſible of it; the interrupted " ſlumbers, or perpetual reſtleſſneſs which pre- " vailed during the earlier periods of the diſorder, " are now ſucceeded by an almoſt lethargic tor- " por, the ſtrabiſmus, and dilatation of the pupil " increaſe, the patient lies with one, or both eyes " half cloſed, which, when minutely examined, " are often found to be completely inſenſible to " light;

" light; the vomiting cafes; whatever food or " medicine is offered is ufually fwallowed with ap- " parent voracity; the bowels at this period ge- " nerally remain obftinately coftive.

" If every effort made by art fails to excite the " finking powers of life, the fymptoms of what " has been called the fecond ftage are foon fuc- " ceeded by others, which more certainly an- " nounce the approach of death.—The pulfe a- " gain becomes equal, but fo weak and quick, " that it is almoft impoffible to count it; a difficul- " ty of breathing, nearly refembling the *Ster- " tor Apoplecticus*, is often obferved; fometimes " the eyes are fuffufed with blood, the flufhing of " the face is more frequent than before, but of " fhorter duration, and followed by a deadly pale- " nefs; red fpots, or blotches fometimes appear " on the body and limbs; deglutition becomes " difficult, and convulfions generally clofe the " fcene. In one cafe, I may obferve, the jaws of " a child of four years of age were fo firmly look- " ed for more than a day before death, that it " was impoffible to introduce either food or medi- " cine into his mouth; and in another cafe, an " hæmiplegia, attended with fome remarkable cir- " cumftances, occurred during the two days pre- " ceding diffolution.

" Hav-

" HAVING thus given as exact an hiſtory of *A-*
" *poplexia Hydrocephalica* as I could compile from
" the writings of others, and from my own obſer-
" vations, I ſhould think myſelf guilty of impoſi-
" tion on my readers if I did not caution them
" that it muſt be conſidered merely as a general
" outline; the human brain ſeems to be ſo ex-
" tremely capricious (if the expreſſion may be al-
" lowed) in the ſignals it gives to other parts of
" the ſyſtem, of the injury it ſuffers throughout
" the courſe of this diſeaſe, that although every
" ſymptom above mentioned does occaſionally oc-
" cur, and indeed few caſes of the diſeaſe are to be
" met with, which do not exhibit many of them;
" yet it does not appear to me, that any one of
" them is conſtantly, and inſeparably connected
" with it."

To this hiſtory I ſhall add a few facts, which are the reſult of obſervations made by myſelf, or communicated to me by my medical brethren.—Theſe facts will ſerve to ſhew that there are many deviations from the hiſtory of the diſorder which has been given, and that it is indeed as Dr Quin has happily expreſſed it, of " a truly proteiform" nature.

I HAVE not found the dilated and inſenſible pupil, the puking, the delirium, or the ſtrabiſmus, to attend univerſally in this diſeaſe.

I SAW one caſe in which the appetite was unimpaired from the firſt to the laſt ſtage of the diſorder.

I HAVE met with one caſe in which the diſorder was attended by blindneſs, and another by double viſion.

I HAVE obſerved an uncommon acuteneſs in hearing to attend two caſes of this diſorder. In one of them the noiſe of the ſparks which were diſcharged from a hiccory fire, produced great pain and ſtartings which threatened convulſions.

I HAVE ſeen three caſes in which the diſeaſe terminated in hemiplegia. In two of them it proved fatal in a few days—in the third it has continued for nearly eighteen months.

I HAVE met with one caſe in which no preternatural ſlowneſs, or intermiſſion was ever perceived in the pulſe.

I HAVE ſeen the diſeaſe in children of nearly all ages. I once ſaw it in a child of ſix weeks old. It was preceded by the cholera infantum.

IN the month of March 1771, I obtained a gill of water from the ventricles of the brain of a negro girl of nine years of age, who died of this diſorder, who complained in no ſtage of it of a pain in her head or limbs, nor of a ſick ſtomach. The diſorder in this caſe was introduced ſuddenly by a pain in the breaſt, a fever, and the uſual ſymptoms of a catarrh.

DR. WISTAR informed me that he had likewiſe met with a caſe of internal dropſy of the brain, in which there was a total abſence of pain in the head.

DR. CARSON informed me that he had attended a child in this diſorder that diſcovered, for ſome days before it died, the ſymptom of hydrophobia.

DR. CURRIE obtained, by diſſection, ſeven ounces of water from the brain of a child which died of this diſorder; in whom he aſſured me no dilatation of the pupil, ſtrabiſmus, ſickneſs, or loſs of appetite had attended, and but very little head-ach.

THE

THE cauſes which induce this diſeaſe, act either *directly* on the brain, or *indirectly* upon it, through the medium of the whole ſyſtem.

THE cauſes which act *directly* on the brain are falls or bruiſes upon the head, certain poſitions of the body, and childiſh plays which bring on congeſtion or inflammation, and afterwards an effuſion of water in the brain.

THE *indirect* cauſes of this diſorder are more numerous, and more frequent, though leſs ſuſpected, than thoſe which have been mentioned. The following diſeaſes of the whole ſyſtem appear to act indirectly in producing an internal dropſy of the brain.

1. INTERMITTING, *remitting*, and *continual* fevers. Of the effects of theſe fevers in inducing this diſorder, many caſes are recorded by Lieutaud.*

MY former pupil, Dr. Woodhouſe, has furniſhed me with a diſſection in which the diſeaſe was evidently the effect of the remitting fever. That ſpecies or ſtate of continual fever which has been diſtinguiſhed by the name of typhus, is often the

* Hiſtoria Anatomico-Medica. Vol. II.

remote cauſe of this diſorder. The languor and weakneſs in all the muſcles of voluntary motion, the head-ach, the inclination to reſt and ſleep, and the diſpoſition to be diſturbed, or terrified by dreams, which are ſaid to be the precurſors of water in the brain, I believe are frequently ſymptoms of a typhus fever which terminates in an inflammation, or effuſion of water in the brain.—The hiſtory which is given of the typhus ſtate of fever in children by Dr. Butter*, ſeems to favor this opinion.

2. The *Rheumatiſm.* Of this I have known two inſtances. Dr. Lettſom has recorded a caſe, from the ſame cauſe †. The pains in the limbs, which are ſuppoſed to be the effect, I ſuſpect, are frequently the cauſe of the diſorder.

3. The *Pulmonary Conſumption.* Of the connection of this diſeaſe with an internal dropſy of the brain, Dr. Percival has furniſhed us with the following communication ‡: "Mr. C——'s daugh-" ter, aged nine years, after labouring under the " phthiſis pulmonalis four months, was affected "with

* Treatiſe on the Infantile Remitting Fever.

† Medical Memoirs, vol. I. p. 174.

‡ Eſſays Medical, Philoſophical, and Experimental, vol. II. p. 339, 340.

" with unuſual pains in her head. Theſe rapidly " increaſed ſo as to occaſion frequent ſcreamings. " The cough, which had before been extremely " violent, and was attended with ſtitches in the " breaſt, now abated, and in a few days ceaſed al- " moſt entirely. The pupils of the eyes became " dilated, a ſtrabiſmus enſued, and in about a week " death put an end to her agonies. Whether this " affection of the head aroſe from the effuſion of " water or of blood, is uncertain, but its influence " on the ſtate of the lungs is worthy of notice." Dr. Quin likewiſe mentions a caſe from Dr. Cullen's private practice, in which an internal dropſy of the brain followed a pulmonary conſumption. Lieutaud mentions, three caſes of the ſame kind †, and two in which it ſucceeded a catarrh ‡.

4. *Eruptive Fevers.* Dr. Odier informs us ||, that he had ſeen four caſes in which it had followed the ſmall pox, meaſles, and ſcarlatina. Dr Lettſom mentions a caſe in which it followed the ſmall pox,

† Hiſtoria Anatomica-Medica, Vol. II. Lib. tertius. Obſ. 380, 394, 1121.

‡ Obſ. 383, 431.

|| Medical Journal.

pox*, and I have seen one in which it was obviously the effects of debility induced upon the system by the measles.

5. Worms. Notwithstanding the discharge of worms gives no relief in this disorder, yet there is good reason to believe, that it has, in some instances, been produced by them.

6. From the dissections of Lieutaud, Quin, and others, it appears further, that the internal dropsy of the brain has been observed to succeed each of the following disorders—viz. The colic—palsy—melancholly—dysentery—dentition—insolation—scrophula—and the sudden healing of old sores. I have seen two cases of it from the last cause, and one in which it was produced by the action of the vernal sun alone upon the system.

From the facts which have been enumerated, and from dissections to be mentioned hereafter, it appears, that the disease in its first stage is the effect of causes which produce a less degree of that inflammation which constitutes phrenitis, and that its second stage is the effect of a less degree of that effusion, which produces serous apoplexy in adults.

The

* Medical Memoirs, Vol. I. p. 171.

The former partakes of the nature of the chronic inflammation of Dr. Cullen, and of the aſthenic inflammation of Dr. Brown. I have taken the liberty to call it *Phrenicula*, from its being a diminutive ſpecies or ſtate of phrenitis. It bears the ſame relation to phrenitis when it ariſes from indirect cauſes, which pneumonicula does to pneumony,—and it is produced nearly in the ſame manner as the pulmonary conſumption, by debilitating cauſes which act primarily on the whole ſyſtem. The peculiar ſize and texture of the brain, ſeem to invite the inflammation and effuſions which follow debility, to that organ in childhood, juſt as the peculiar ſtructure and ſituation of the lungs invite the ſame morbid phænomena, after the body has acquired its growth, in youth and middle life. In the latter ſtage which has been mentioned, the internal dropſy of the brain partakes of ſome of the properties of apoplexy. It differs from it in being the effect of a *ſlow*, inſtead of a *ſudden* effuſion of water or blood, and in being the effect of cauſes which are of an acute inſtead of a chronic nature. The more advanced perſons are in life who are affected by this diſorder, the more it approaches to the nature of the common apoplexy, by a ſpeedy termination in life or death. Dr. Cullen has called it ſimply by the name of "apoplexia hydrocephalica." I have preferred for this

this ſtage of the diſorder the term of *chronic apoplexy*; for I believe with Dr. Quin, that it has no connection with an hydropic diatheſis of the whole ſyſtem. I am forced to adopt this opinion, from my having never ſeen it accompanied by dropſical effuſions in other parts of the body, nor a general dropſy accompanied by an internal dropſy of the brain. No more occurs in this diſeaſe than takes place when hydrothorax follows an inflammation of the lungs, or when ſerous effuſions follow a inflammation of the joints. I do not ſuppoſe that both inflammation, and effuſion always attend in this diſorder; on the contrary, diſſections have ſhewn ſome caſes of inflammation, with little or no effuſion, and ſome of effuſion without inflammation. Perhaps this variety may have been produced by the different ſtages of the diſeaſe in which death and the inſpection of the brain took place. Neither do I ſuppoſe, that the two ſtages which have been mentioned, always ſucceed each other in the common order of inflammation and effuſion. In every caſe where the full tenſe—ſlow and intermitting pulſe occurs, I believe there is inflammation; and as this ſtate of the pulſe occurs in moſt caſes in the beginning of the diſorder, I ſuppoſe the inflammation, in moſt caſes, to precede the effuſion of water. I have met with only one caſe in which the ſlow and

tenſe

tenſe pulſe was abſent; and out of ſix diſſections of patients whom I have loſt by this diſorder, the brains of four of them exhibited marks of inflammation.

HAVING adopted the theory of this diſeaſe, which I have delivered ſeveral years ago, I reſolved upon ſuch a change in my practice as ſhould accord with it. The firſt remedy indicated by it was

I. BLOOD-LETTING. I ſhall briefly mention the effects of this remedy in all the caſes in which I have preſcribed it.

CASE I.

ON the 15th of November, 1790, I was called to viſit the daughter of W—— W———, aged four years, who was indiſpoſed with a cough—a pain in her bowels—a coma—great ſenſibility of her eyes to light—coſtiveneſs—and a ſuppreſſion of urine—a ſlow and irregular, but tenſe pulſe—dilated pupils, but no headach. I found upon inquiry, that ſhe had received a hurt on her head by a fall, about ſeven weeks before I ſaw her. From this information, as well as from her ſymptoms, I had no doubt of the diſorder being the internal dropſy of the brain. I adviſed the loſs of five ounces of blood, which gave her ſome relief. The blood was

was ſizy. The next day ſhe took a doſe of jalap and calomel, which operated twelve times. On the 18th ſhe loſt four ounces more of blood, which was more ſizy than that drawn on the 15th. From this time ſhe mended rapidly. Her coma left her on the 20th, and her appetite returned; on the 21ſt, ſhe made a large quantity of turbid dark coloured urine. On the 22d her pulſe became again a little tenſe, for which ſhe took a gentle puke. On the 23d ſhe had a natural ſtool. On the 24th her pupils appeard to be contracted to their natural ſize, and on the 30th I had the pleaſure of ſeeing her ſeated at a tea-table in good health. Her pulſe, notwithſtanding, was a little more active and tenſe than natural.

CASE II.

On the 24th of the ſame month, I was called to viſit the ſon of J—— C———, aged 4 years, who had been hurt about a month before, by a wound on his forehead with a brick bat, the mark of which ſtill appeared. He had been ill for near two weeks with coma, head-ach, colic, vomiting, and frequent ſtartings in his ſleep. His evacuations by ſtool and urine were ſuppreſſed; he had diſcharged three worms, and had had two convulſion fits juſt before I ſaw him. The pupil of the right

eye

eye was larger than that of the left. His pulſe was full, tenſe, and ſlow, and intermitted after every *fourth* ſtroke. The ſymptoms plainly indicated an internal dropſy of the brain. I ordered him to loſe four or five ounces of blood. Only three ounces of blood were drawn, which produced a ſmall change in his pulſe. It rendered the intermiſſion of a pulſation perceptible only after every tenth ſtroke. On the 25th he loſt five ounces of blood, and took a purge of calomel and jalap. On the 26th he was better. On the 27th, the vomiting was troubleſome, and his pulſe was ſtill full and tenſe, but regular. I ordered him to loſe four ounces of blood. On the 28th, his puking and head-ach continued,—his pulſe was a little tenſe, but regular,----and his right pupil leſs dilated. On the 29th, his head-ach and puking ceaſed---and he played about the room. On the 4th of December he grew worſe---his head-ach and puking returned, with a hard pulſe, for which I ordered him to loſe five ounces of blood. On the 5th he was better, but on the 6th his head-ach and puking returned. On the 7th I ordered his forehead to be bathed frequently with vinegar, in which ice had been diſſolved. On the 8th he was much better. On the 9th his pulſe became ſoft, and he complained but little of head-ach. After appearing to be well for near three

weeks

weeks, except that he complained of a little headach, on the 29th his pulſe became again full and tenſe, for which I ordered him to loſe ſix ounces of blood, which for the firſt time diſcovered a buffy coat. After this laſt bleeding, he diſcharged a large quantity of water. From this time he recovered ſlowly, but his pulſe was a little fuller than natural on the 19th of January following. He is now alive, and in good health.

CASES III. AND IV.

In the month of March 1792, I attended two children of three years of age, the one the daughter of W——— K———, the other the daughter of W——— B———: each of whom had moſt of the ſymptoms of the inflammatory ſtage of the internal dropſy of the brain. I preſcribed the loſs of four ounces of blood, and a ſmart purge in both caſes, and in the courſe of a few days had the pleaſure of obſerving all the ſymptoms of the diſeaſe perfectly ſubdued in each of them.

CASE V.

In the months of July and Auguſt 1792, I attended a female ſlave of a lady from one of the Weſt-

Weſt-India iſlands, who had an obſtinate head-ach, coma, vomiting, and a tenſe, full, and *ſlow* pulſe. I believed it to be the phrenicula, or internal dropſy of the brain, in its inflammatory ſtage. I bled her five times in the courſe of two months, and each time with obvious relief of all the ſymptoms of the diſorder. Finding that her head-ach, and a diſpoſition to vomit, continued after the tenſion of her pulſe was nearly reduced, I gave her as much calomel as excited a gentle ſalivation, which in a few weeks completed her cure.

CASE VI.

THE daughter of R——— M———, aged eight years, in conſequence of the ſuppreſſion of an habitual diſcharge from ſores on her head, in the month of April 1793, was affected by violent head-ach, puking, great pains and weakneſs in her limbs, and a full, tenſe, and *ſlow* pulſe. I believed theſe ſymptoms to be produced by an inflammation of the brain. I ordered her to loſe ſix or ſeven ounces of blood, and gave her two purges of jalap and calomel, which operated very plentifully. I afterwards applied a bliſter to her neck. In one week from the time of my firſt viſit to her ſhe appeared to be in perfect health.

CASE

CASE VII.

A YOUNG woman of 18 years of age—a hired ſervant in the family of Mrs. E. S. had been ſubject to a head-ach every ſpring for ſeveral years. The unuſually warm days which occurred in the beginning of April 1793, produced a return of this periodical pain. On the eighth of the month, it was ſo ſevere as to confine her to her bed. I was called to viſit her on the 9th. I found her comatoſe, and when awake, delirious. Her pupil was unuſually dilated, and inſenſible to the light. She was conſtantly ſick at her ſtomach, and vomited frequently. Her bowels were obſtinately coſtive, and her pulſe was full, tenſe, and ſo ſlow as ſeldom to exceed, for ſeveral days, from 56 to 60 ſtrokes in a minute. I ordered her to looſe ten ounces of blood every day for three days ſucceſſively, and gave her, on each of thoſe days, ſtrong doſes of jalap and aloes. The laſt blood which was drawn from her was ſizy. The purges procured from three to ten diſcharges every day from her bowels. On the 12th, ſhe appeared to be much better. Her pulſe was leſs tenſe, and beat 80 ſtrokes in a minute. On the 14th, ſhe had a fainting fit. On the 15th, ſhe ſat up, and called for food. The pupils of her eyes now recovered their ſenſibility

to

to light, as well as their natural ſize. Her head-ach left her, and on the 17th, ſhe appeared to be in good health. Her pulſe, however, continued to beat between 50 and 60 ſtrokes only in a minute, and retained a ſmall portion of irregular action for ſeveral days after ſhe recovered.

I AM the more diſpoſed to pronounce the caſes which have been deſcribed to have been internal dropſy of the brain, from my having never been deceived in a ſingle caſe in which I have examined the brains of patients whom I have ſuſpected to have died of it.

I BELIEVE, with Dr. Quin, that this diſorder is much more frequent than is commonly ſuppoſed. I can recollect many caſes of anomalous fever and head-ach in children, which have excited the moſt diſtreſſing apprehenſions of an approaching internal dropſy of the brain, but which have yielded in a few days to bleeding, or to purges and bliſters. I think it probable, that ſome, or perhaps moſt of theſe caſes, might have terminated in an effuſion of water in the brain, had they been left to themſelves, or not been treated with the above remedies. I believe further, that it is often prevented by all thoſe phyſicians who treat the firſt ſtage of febrile diſeaſes in children with

evacuations, juſt as the pulmonary conſumption is prevented by bleeding, and low diet, in an inflammatory catarrh.

I AM ſorry, however, to add in this place, that I have failed in five caſes, in which I uſed the remedy of blood-letting in the phrenicula, or in the inflammatory ſtage of this diſorder; perhaps it was not uſed ſo copiouſly as the diſeaſe required. If the relation of this diſorder to pneumonicula be the ſame in its cure, that I have ſuppoſed it to be in its cauſe, then I am perſuaded, that the ſame exceſs in blood-letting is indicated in it, above what is neceſſary in phrenitis, that has been practiſed in pneumonicula, above what is neceſſary in the cure of an acute inflammation of the lungs. The continuance, and in ſome inſtances, the increaſe of the appetite in the internal dropſy of the brain, would ſeem to favour this opinion no leſs in this diſorder, than in the inflammatory ſtate of pulmonary conſumption. Where the internal dropſy is obviouſly the effect of a fall, or of any other cauſe which acts *directly* on the brain, there can be no doubt of the ſafety of very plentiful bleeding; all practical writers upon ſurgery concur in adviſing it. Dr. Penington has favoured me with an extract from Mr Cline's manuſcript lectures upon anatomy, delivered in London in the winter of 1792, which places the advantage of blood-letting,

in that ſpecies of inflammation which follows a local injury of the brain, in a very ſtrong point of light. "I know (ſays he) that ſeveral practitioners object to the uſe of evacuations, as remedies for concuſſions of the brain, becauſe of the weakneſs of the pulſe, but in theſe caſes, the pulſe is *depreſſed*. Beſides experience ſhews, that evacuations are frequently attended with very great advantages. I remember a remarkable caſe of a man in this [St. Thomas's hoſpital] who was under the care of Mr. Baker. He lay in a comatoſe ſtate, for three weeks after an injury of the head. During that time, he was bled *twenty* times, that is to ſay, he was bled once every day upon an average. He was bled twice a day *plentifully*, but towards the concluſion, he was bled more ſparingly, and only every other day; but at each bleeding, there were taken, upon an average, about ſixteen ounces of blood. In conſequence of this treatment, the man perfectly recovered his health and reaſon."

A II. remedy to be uſed in the firſt ſtage of this diſorder is PURGES. I have conſtantly obſerved all the patients whoſe caſes have been related, to be relieved by plentiful and repeated evacuations from the bowels. I was led to the uſe of

frequent purges, by having long obſerved their good effects in palſies, and other caſes of congeſtion in the brain, where blood letting was unſafe, and where it had been uſed without benefit. In the Leipſic Commentaries,* there is an account of a caſe of internal dropſy of the brain, which followed the meaſles, being cured by no other medicines than purges and diuretics. I can ſay nothing in favor of the latter remedy, in this diſorder, from my own experience. The digitalis purpurea, has been uſed in this city, by ſeveral reſpectable practitioners, but I believe, in no one inſtance with any advantage.

III. BLISTERS have been uniformly recommended by all practical writers upon this diſeaſe. I have applied them to the head, neck and temples, and generally with obvious relief to the pain in the head. They ſhould be omitted in no ſtage of the diſorder; for even in the inflammatory ſtage, the diſcharge they occaſion from the veſſels of the head, greatly overbalances their ſtimulating effects upon the whole ſyſtem.

IV. MERCURY was long conſidered as the only remedy, which gave the leaſt chance of a recovery from

* Vol. xxix. p. 139.

from this formidable diſorder. Out of all the caſes in which I gave it, before the year 1790, I ſucceeded in only two—one of them was a child of three years old, the other was a young woman of 26 years of age. I am the more ſatisfied that the latter caſe was internal dropſy of the brain, from my patient having relapſed, and died between two and three years afterwards, of the ſame diſorder. Perhaps my repeated failures in the uſe of this remedy, were occaſioned by my giving it before the inflammatory action of the ſyſtem was ſufficiently ſubdued, by previous evacuations. The ſame rule ſhould probably be obſerved in giving it in this diſorder, which is practiſed in adminiſtering it in effuſions of water in other parts of the body, and in all other diſeaſes of diminiſhed action in the ſyſtem. In none of the caſes, except the 5th, in which I uſed bleeding and purging with ſucceſs, did I preſcribe calomel with any other view than to encreaſe the evacuation from the bowels.

V. LINEN CLOTHS wetted with cold vinegar or water, and applied to the forehead, contribute very much to relieve the pain in the head. In the caſe of I. C.* the ſolution of ice in the vinegar appeared to afford the moſt obvious relief of this diſtreſſing ſymptom.

* Caſe II.

A PUNCTURE in the brain has been propoſed by ſome writers to diſcharge the water from its ventricles. If the theory I have delivered be true, the operation promiſes nothing, even though it could always be performed with perfect ſafety. In caſes of local injuries, or of inflammation from any cauſe, it muſt neceſſarily increaſe the diſorder; and in caſes of effuſion only, the debilitated ſtate of the whole ſyſtem forbids us to hope for any relief from ſuch a local remedy.

BARK, wine, and opium promiſe much more ſucceſs in the laſt ſtage of the diſorder. I can ſay nothing in their favor from my own experience; but from the aid they afford to mercury in other diſeaſes, I conceive they might be made to accompany it with advantage.

CONSIDERING the nature of the indirect cauſes which induce the diſeaſe, and the caſe of a relapſe, which has been mentioned, after an interval of near three years, as well as the ſymptoms of ſlow convaleſcence, manifeſted by the pulſe, which occurred in the firſt and ſeventh caſes, I ſubmit it to the conſideration of phyſicians, whether the uſe of moderate exercife, and the cold bath, ſhould not be recommended to prevent a return of the diſorder in every caſe where it has yielded to the power of medicine.

AN
ACCOUNT
OF THE
MEASLES,
AS THEY APPEARED IN
PHILADELPHIA,
IN THE SPRING OF 1789.

AN

ACCOUNT

OF THE

MEASLES, &c.

THE weather, in December 1788, and in January 1789, was variable, but seldom very cold. On the first of February 1789, at 6 oclock in the morning, the mercury in Farenheit's thermometer, fell five degrees below o in the city of Philadelphia. At twenty miles from the city, on the Schuylkill, it fell 12° below o, at the same hour.

hour. On the 19th and 20th of this month, there fell a quantity of ſnow, the depth of which, upon an average, was ſuppoſed to be about eight or ten inches. On the 23d, 24th, 25th and 27th, the weather was very cold. The mercury fluctuated during theſe days between 4 and 10° above 0.

In the intervals between theſe cold days, the weather frequently moderated, ſo that the Delaware was frozen and thawed not leſs than four times. It was not navigable till the eighth of March. There were in all, during the winter and month of March, ſixteen diſtinct falls of ſnow.

In April and May there were a few warm days; but upon the whole, it was a very cold and backward ſpring. The peaches failed almoſt univerſally. There were no ſtrawberries or cherries on the 24th of May, and every other vegetable product was equally backward. A country woman of 84 years of age, informed me, that it was the coldeſt ſpring ſhe had ever known. It was uncomfortable to ſit without fire till the firſt of June.

The meaſles appeared firſt in the Northern Liberties, in December. They ſpread ſlowly in January,

nuary, and were not univerſal in the city till February and March.

THIS diſeaſe, like many others, had its *precurſor*. It was either a gum-boil, or a ſore on the tongue. They were very common, but not univerſal. They occurred in ſome inſtances, ſeveral days before the fever, but in general, they made their appearance during the eruptive fever, and were a ſure mark of the approaching eruption of the meazles. I was firſt led to obſerve this fact, from having read Dr. Quin's accurate account of the meaſles in Jamaica. I ſhall now proceed to mention the ſymptoms of the meaſles as they appeared in the different parts of the body.

1. IN the HEAD, they produced great pain, ſwelling of the eye-lids, ſo as to obſtruct the eye-ſight, tooth-ach, bleeding at the noſe, tinnitus aurium, and deafneſs; alſo coma for two days, and convulſions. I ſaw the laſt ſymptom only in one inſtance. It was brought on by a ſtoppage of a running from the ear.

2. IN the THROAT and LUNGS, they produced a ſoreneſs and hoarſeneſs, acute or dull pains in the breaſt and ſides, and a painful or diſtreſſing cough. In one caſe, this cough continued for two hours without any intermiſſion, attended by copious expectoration

expectoration. In two cases, I saw a constant involuntary discharge of phlegm and mucus from the mouth, without any cough. One of them terminated fatally. Spitting of blood occurred in several instances. The symptoms of pneumonia vera notha and typhoides were very common. I saw two fatal cases from pneumonia notha, in both of which, the patients died with the trunk of the body in an erect posture. I met with two cases in which there was no cough till the eruption made its appearance on the fourth day, and one which was accompanied by all the usual symptoms of the cynanche trachealis humoralis.

3. In the STOMACH the measles produced, in many instances, sickness and vomiting. And,

4. In the BOWELS, griping, diarrhœa, and in some instances, bloody stools. The diarrhœa occurred in every stage of the disorder, but it was bloody and most painful in its decline. I attended a black girl who discharged a great many worms, but without the least relief of any of her symptoms.

THERE was a great variety in this disease—1st, In the *time* of the attack of the fever, from the *time* of the reception of the contagion. In general

ral the interval was fourteen days, but it frequently appeared before and sometimes later than that period.

2nd. In the time of the eruption, from the beginning of the fever. It generally appeared on the third and fourth days. In one case, Dr. Waters informed me, it did not appear till the eighth day.

3d. In the abatement or continuance of the fever after the eruption.

4th. In the colour and figure of the eruption. In some it put on a *pale* red, in others a *deep*, and in a few a *livid* colour, resembling an incipient mortification. In some there appeared red blotches, in others an equally diffused redness, and in a few, eruptions like the small pox, called by Dr. Cullen, rubiola varioloides.

5. In the duration of the eruption on the skin. It remained in most cases only three or four days; but in one, which came under my care, it remained nine days.

6. In the manner of its retrocession. I saw very few cases of its leaving the branny appearance

ance ſo generally ſpoken of by authors on the ſkin.

7. In not affecting many perſons, and even families who were expoſed to it.

The ſymptoms which continued in many after the retroceſſion of the meaſles, were cough,---hoarſeneſs,---or complete aphonia, which continued in two caſes for two weeks; alſo diarrhœa, opthalmy, a bad taſte in the mouth, a defect or exceſs of appetite, and a fever, which in ſome inſtances was of the intermitting kind, but which in more aſſumed the more dangerous form of the typhus mitior. I attended two caſes of internal dropſy of the brain ſoon after it. One was evidently excited by a fall. They both ended fatally.

During the prevalence of the diſeaſe, I obſerved ſeveral perſons (who had had the meaſles, and who were cloſely confined to the rooms of perſons ill with them) to be affected with a ſlight cough, ſore throat, and even ſores in the mouth. I find the ſame fact taken notice of by Dr. Quier.

But I obſerved further, many children to be affected by a fever, cough, and all the other ſymptoms of the meaſles which have been mentioned, except a general eruption, for, in ſome, there was a trifling efflorescence about the neck and breaſt. I obſerved

ſerved the ſame thing in 1773 and 1783. In my note book, I find the following account of the appearance of this diſeaſe in children in the year 1773. "The meaſles appeared in March, a catarrh (for by that name I then called it) appeared at the ſame time, and was often miſtaken for them, the ſymptoms being nearly the ſame in both. In the catarrh there was in ſome inſtances a trifling eruption. A lax often attended it, and ſome who had it, had an extremely ſore mouth."

I WAS the more ſtruck with this diſeaſe, from finding it was taken notice of by Dr. Sydenham. He calls it a morbillous fever. I likewiſe find an account of it in the 2d article of the 5th volume of the Edinburgh Medical Eſſays. The words of the author who is anonymous, are as follow. "During this meaſley ſeaſon, ſeveral perſons, who never had the meaſles, had all the ſymptoms of meaſles, which went off in a few days without any eruptions. The ſame perſons had the meaſles months or years afterwards." Is this diſeaſe a common fever, marked by the reigning epidemic, and produced in the ſame manner, and by the ſame cauſes, as the variolous fever deſcribed by Dr. Sydenham, which he ſays prevailed at the ſame

ſame time with the ſmall pox? I think it is not. My reaſons for this opinion are as follow.

1. I NEVER ſaw it affect any but children, in the degree that has been mentioned, and ſuch only as had never had the meaſles.

2. IT affected whole families at the ſame time. It proved fatal to one of three children whom it affected on the ſame day.

3. IT terminated in a pulmonary conſumption in a boy of ten years old, with all the ſymptoms which attend that diſeaſe when it follows the regular meaſles.

4. IT affected a child in one family on the ſame day that two other members of the ſame family were affected by the genuine meaſles.

5. IT appeared on the uſual days of the genuine meaſles, from the time the perſons affected by it were expoſed to its contagion. And,

6. It communicated the diſeaſe in one family, in the uſual time in which the diſeaſe is taken from the genuine meaſles.

THE

THE meaſles then appear to follow the analogy of the ſmall pox, which affects ſo ſuperficially as to be taken a ſecond time, and which produce on perſons who have had them what are called the nurſe pock. They follow likewiſe the analogy of another diſeaſe, viz. the ſcarlatina anginoſa. In the account of the epidemic for 1773, publiſhed in the third volume of the Edinburgh Medical Eſſays, we are told, that ſuch patients as had previouſly had the ſcarlet fever without ſore throats, took the ſore throat, and had no eruption, while thoſe who had previouſly had the ſore throat had a ſcarlet eruption, but the throat remained free from the diſtemper. All other perſons who were affected had both.

FROM theſe facts, I have taken the liberty of calling it the *Internal Meaſles*, to diſtinguiſh it from that ſpecies which is *external*. I think the diſcovery of this new ſpecies of this diſorder of ſome application to practice.

1. IT will lead us to be cautious in declaring any diſeaſe to be the external meaſles in which there is not a general eruption. From my ignorance of this, I have been led to commit ſeveral miſtakes which were diſhonourable to the profeſſion. I was called during the prevalence of the meaſles in the above-named ſeaſon, to viſit a girl of twelve years

years old, with an eruption on the ſkin. I called it the meaſles. The mother told me, it was impoſſible, for that I had in 1783 attended her for the ſame diſorder. I ſuſpect the anonimous author before-mentioned has fallen into the ſame error. He adds to the account before quoted the following words. "Others who had undergone the "meaſles formerly, had at *this time*, a fever of the "eriſipelatous kind, with eruptions like to which "nettles cauſe, and all the *previous* and concomi-"tant ſymptoms of the meaſles from the begin-"ning to the end of the diſeaſe."

2. If inoculation, or any other mode of leſſening the violence of the diſeaſe ſhould be adopted, it will be of conſequence to know what perſons are ſecure from the attacks of it, and who are ſtill expoſed to it.

I shall now add a ſhort account of my method of treating this diſorder.

Many hundred families came through the diſeaſe without the help of a phyſician. But in many caſes it was attended with peculiar danger, and in ſome with death. I think it was much more fatal than in the years 1773 and 1783, probably owing to the variable weather in the winter, and the coldneſs and dampneſs of the ſucceeding ſpring. Dr. Huxham ſays, he once ſaw the meaſles attend-

ed with peculiar mortality, during a late cold and damp ſpring in England. It was much more fatal (cæteris paribus) to adults than to young people.

THE remedies I uſed were,

1. BLEEDING, in all caſes where great pain and cough with a hard pulſe attended. In ſome I found it neceſſary to repeat this remedy. But I met with many caſes in which it was forbidden by the weakneſs of the pulſe, and by other marks of great debility.

2. VOMITS. Theſe were very uſeful in removing a nauſea; they likewiſe favoured the eruption of the meaſles.

3. DEMULCENT and DILUTING drinks. Theſe were barley water, bran, and flaxſeed tea, dried cherry and raw apple water, alſo beverage, and cyder and water. The laſt drink I found to be the moſt agreeable to my patients of any that have been mentioned.

4. BLISTERS to the neck, ſides, and extremities, according to the ſymptoms. They were uſeful in every ſtage of the diſorder.

5. OPIATES. Theſe were given not only at night, but in ſmall doſes during the day, when a troubleſome cough or diarrhœa attended.

6. WHERE a catarrhal fever enſued, I uſed bleeding and bliſters. In thoſe caſes in which this fever terminated in an intermittent, or in a typhus, I gave the bark with evident advantage. In that caſe of meaſles, formerly mentioned, which was accompanied by ſymptoms of cynanche trachialis humoralis, I gave calomel with the happieſt effects. In the admiſſion of *freſh air* I obſerved a medium as to its temperature, and accommodated it to the degrees of action in the ſyſtem. In different parts of the country, in Pennſylvania and New-Jerſey, I heard with great pleaſure of the *cold air* being uſed as freely and as ſucceſsfully in this diſorder as in the inflammatory ſmall pox. The ſame people who were ſo much benefited by *cool air*, I was informed, drank plentfully of cold water during every ſtage of the diſorder. One thing in favor of this country practice deſerves to be mentioned, and that is, evident advantage aroſe in all the caſes which I attended, from patients leaving their beds in the febrile ſtate of this diſeaſe. But this was practiſed only by thoſe in whom inflammatory diatheſis prevailed, for theſe alone had ſtrength enough to bear it.

THE

THE convaleſcent ſtate of this diſeaſe required particular attention.

1. A DIARRHÆA often continued to be troubleſome after other ſymptoms had abated. I relieved it by opiates and demulcent drinks. Bleeding has been recommended for it, but I did not find it neceſſary in a ſingle caſe.

2. AN OPTHALMIA which ſometimes attended, yielded to aſtringent collyria and bliſters.

3. WHERE a cough or fever followed ſo ſlight as not to require bleeding, I adviſed a milk and vegetable diet, country air, and moderate warmth; for whatever might have been the relation of the lungs in the beginning of the diſeaſe to cold air, they were now evidently too much debilitated to bear it.

4. IT is a common practiſe to preſcribe purges after the meaſles. After the aſthenic ſtate of this diſorder they certainly do harm. In all caſes, the effects of them may be better obviated by diet, full or low, ſuitable clothing, and gentle exerciſe, or country air. I omitted them in ſeveral caſes, and no eruption or diſeaſe of any kind followed their diſuſe.

I SHALL only add to this account of the meaſles, that in ſeveral families, I ſaw evident advantages from preparing the body for the reception of the contagion, by means of a vegetable diet.

AN

ACCOUNT

OF THE

INFLUENZA,

AS IT APPEARED IN

PHILADELPHIA,

In the Autumn of 1789—In the Spring of 1790—and in the Winter of 1791.

AN

ACCOUNT

OF THE

INFLUENZA, &c.

THE latter end of the month of Auguſt in the ſummer of 1789, was ſo very cool that fires became agreeable. The month of September was cool, dry, and pleaſant. During the whole of this month, and for ſome days before it began, and after it ended, there had been no rain. In the beginning of October, a number of the members of the firſt

firſt Congreſs, that had aſſembled in New-York, under the preſent national government, arrived in Philadelphia, much indiſpoſed with colds. They aſcribed them to the fatigue and night air to which they had been expoſed in travelling in the public ſtages; but from the number of perſons who were affected, from the uniformity of their complaints, and from the rapidity with which it was propagated through our city, it ſoon became evident that it was the diſeaſe ſo well known of late years, by the name of the Influenza.

THE ſymptoms which uſhered in the diſeaſe, were generally a hoarſeneſs, ſore-throat, a ſenſe of wearineſs, chills, and a fever. After the diſeaſe was formed, it affected more or leſs the following parts of the body. Many complained of acute pains in the HEAD. Theſe pains were frequently fixed between the eye-balls, and in three caſes which came under my notice, they were terminated by abſceſſes in the frontal ſinus, which diſcharged themſelves through the noſe. The pain, in one of theſe caſes, before the rupture of the abſceſs, was ſo exquiſite, that my patient informed me, that he felt as if he ſhould loſe his reaſon. Many complained of a great itching in the EYE-LIDS. In ſome, the eye-lids were ſwelled. In others, a copious effuſion of water took place from the EYES; and

and in a few, there was a true ophthalmia. Many complained of great pains in one EAR, and some of pains in both EARS. In some these pains terminated in abscesses, which discharged for some days a bloody or purulent matter. In others, there was a swelling behind each ear without a suppuration. SNEEZING was an universal symptom. In some it occurred not less than fifty times in a day. The matter discharged from the nose, was so acrid as to inflame the nostrils, and the upper-lip, in such a manner as to bring on swellings, sores, and scabs in many people. In some, the nose discharged drops, and in a few, streams of blood, to the amount, in one case, of twenty ounces. In many cases, it was so much obstructed, as to render breathing through it difficult. In some there was a total defect of TASTE. In others there was a bad taste in the mouth, which frequently continued through the whole course of the disease. In some there was a want of APPETITE. In others it was perfectly natural. Some complained of a soreness in their mouths, as if they had been inflamed by holding pepper in them. Some had SWELLED JAWS, and many complained of the TOOTH-ACH. I saw only one case in which the disease produced a COMA.

MANY

MANY were affected with pains in the BREAST and SIDES. A difficulty of breathing attended in ſome, and a COUGH was univerſal. Sometimes this cough alternated with a pain in the head. Sometimes it preceded this pain, and ſometimes it followed it. It was at all times diſtreſſing. In ſome inſtances it reſembled the chin cough. One perſon expired in a fit of coughing, and many perſons ſpat blood in conſequence of its violence. I ſaw ſeveral patients in whom the diſeaſe affected the trachea chiefly, producing great difficulty of breathing, and, in one caſe, a ſuppreſſion of the voice, and I heard of one caſe in which the diſeaſe, by falling on the trachea, produced a cynanche trachealis. In moſt of the caſes which terminated fatally, the patients died of pneumonia notha.

THE STOMACH was ſometimes affected by nauſea, and vomiting; but this was far from being an univerſal ſymptom.

I MET with four caſes in which the whole force of the diſeaſe fell upon the BOWELS and went off in a diarrhœa; but in general the bowels were regular or coſtive.

THE

THE LIMBS were affected with ſuch acute pains as to be miſtaken for the rheumatiſm, or for the break-bone-fever of 1780. The pains were moſt acute in the back and thighs.

PROFUSE SWEATS appeared in many over the whole body in the beginning, but without affording any relief. It was in ſome inſtances accompanied by eryſipelatous, and in four caſes which came to my knowledge, it was followed by miliary eruptions.

THE pulſe was ſometimes tenſe, and quick, but ſeldom full. In a great majority of thoſe whom I viſited it was quick, weak, and ſoft.

THERE was no appearance in the urine different from what is common in all fevers.

THE diſeaſe had evident remiſſions, and the fever ſeldom continued above three or four days; but the cough, and ſome other troubleſome ſymptoms, ſometimes continued two or three weeks.

IN a few perſons, the fever terminated in a tedious and dangerous typhus.

IN

In ſeveral pregnant women it produced uterine hæmorrhages and abortions.*

It affected adults of both ſexes alike. A few old people eſcaped it. It paſſed by children under eight years old with a few exceptions. Out of five and thirty maniacs in the Pennſylvania hoſpital, only three were affected by it. No profeſſion or occupation eſcaped it. The ſmell of tar and tobacco did not preſerve the perſons who worked in them from the contagion—nor did the uſe of tobacco, in ſnuff, ſmoking, or chewing afford a ſecurity againſt it.†

Even previous and exiſting diſeaſes did not protect patients from it. It inſinuated into ſick chambers, and blended itſelf with every ſpecies of chronic complaint.

It was remarkable that perſons who worked in the

* It is remarkable that abortions are produced chiefly by contagious fevers, ſuch as the plague, the ſmall-pox, and the meaſles, while inflammatory and bilious fevers, and even the dyſentery which frequently agitate the female ſyſtem more violently, ſeldom induce thoſe effects.

† Mr. Howard informs us that the uſe of tobacco is not a preſervative againſt the plague as has formerly been ſuppoſed; of courſe that apology for the uſe of an offenſive weed ſhould not be admitted.

the open air, such as sailors, and long-shore-men (to use a mercantile epithet) had it much worse than tradesmen who worked within doors. A body of surveyors in the eastern woods of Pennsylvania, who caught it all at once from one of their attendants, suffered extremely from it. Even the vigor of constitution, which is imparted by the savage life, did not mitigate its violence. Mr. Andrew Ellicot, the geographer of the United States, informed me that he was a witness of its affecting the Indians in the neighbourhood of Niagara with peculiar force. The cough which attended this disorder, was so new and so irritating a complaint among them, that they ascribed it to witchcraft.

It proved most fatal on the sea-shore of the United States.

Many people who had recovered, were affected a second time with all the symptoms of the disorder. I should have ascribed this second attack to the sensible qualities of the atmosphere, had I not observed it to affect those persons chiefly who had occasionally changed their place of residence during the prevalence of the disorder. I met with a woman, who after recovering from it in Philadelphia, took it a second time in New-York, and a third time upon her return to Philadelphia.

MANY thouſand people had the diſorder who were not confined to their houſes, but tranſacted buſineſs as uſual out of doors.——A perpetual coughing was heard in every ſtreet of the city.—Buying and ſelling were rendered tedious by the coughing of the farmer and the citizen who met in market places. It even rendered divine ſervice ſcarcely intelligible in the churches.

A FEW perſons who were expoſed to the contagion eſcaped it, and ſome had it ſo lightly as ſcarcely to be ſenſible of it. Of the perſons who were confined to their houſes, not a fourth part of them kept their beds.

IT proved fatal (with few exceptions) only to old people, and to perſons who had been previouſly debilitated by conſumptive complaints. It likewiſe carried off ſeveral hard drinkers. It terminated in aſthma in three perſons whoſe caſes came under my notice, and in pulmonary conſumption, in many more. I met with an inſtance in a lady, who was much relieved of a chronic complaint in her liver; and I heard of another inſtance of a clergyman whoſe general health was much improved by a ſevere attack of this diſorder.

THE

THE contagion was not wholly confined to the human ſpecies. It affected two cats, two houſe-dogs, and one horſe within the ſphere of my obſervations. One of the dogs diſturbed his miſtreſs ſo much by coughing at night, that ſhe gave him ten drops of laudanum for ſeveral nights, which perfectly compoſed him. One of the cats had a vomiting with her cough. The horſe breathed as if he had been affected by the cynanche trachealis.

THE ſcarlatina anginoſa, which prevailed during the ſummer, diſappeared after the firſt of October; but appeared again after the influenza left the city. Nor was the remitting fever ſeen during the prevalence of the reigning epidemic.

I INOCULATED about twenty children for the ſmall-pox during this prevalence of the Influenza, and never ſaw that diſeaſe exhibit a more favorable appearance.

IN the treatment of the Influenza I was governed by the ſtate of the ſyſtem. Where inflammatory diatheſis diſcovered itſelf by a full or tenſe pulſe, or where great difficulty of breathing occurred, and the pulſe was low and weak in the beginning of the diſorder, I ordered moderate bleeding. In a few caſes in which the ſymptoms

of

of pneumony attended, I bled a ſecond time with advantage. In all theſe inſtances of inflammatory affection I gave the uſual antiphlogiſtic medicines. I found that vomits did not terminate the diſorder, as they often do a common catarrh, in the courſe of a day, or of a few hours.

In caſes where no inflammatory action appeared in the ſyſtem, I preſcribed cordial drinks and diet, and forbad every kind of evacuation. I ſaw ſeveral inſtances of perſons who had languiſhed for a week or two with the diſorder, who were ſuddenly cured by eating a hearty meal, or by drinking half a pint of wine, or a pint of warm punch. In all theſe caſes of debility, liquid laudanum gave great relief, not only by ſuſpending the cough, but by eaſing the pains in the bones.

I met with a caſe of an old lady who was ſuddenly and perfectly cured of her cough by a fright.

The duration of the diſorder in our city was about ſix weeks——It ſpread from New-York and Philadelphia in all directions, and in the courſe of a few months pervaded every ſtate in the union. It was carried from the United States to ſeveral of the Weſt India iſlands. It prevailed in the iſland

of Grenada in the month of November 1789, and it was heard of in the courſe of the enſuing winter in the Spaniſh ſettlements in South America.

THE following winter was unuſually mild, inſomuch that the navigation of the Delaware was not interrupted during the whole ſeaſon, only from the 7th to the 24th of February. The weather on the 3d and 4th days of March was very cold, and on the 8th and 9th days of the ſame month, the mercury in Fahrenheit's thermometer ſtood at 4° at 7 o'clock in the morning. On the 10th and 11th, there fell a deep ſnow. The weather during the remaining part of the month was cold, rainy, and variable. It continued to be variable during the month of April. About the middle of the month, there fell an unuſual quantity of rain. The ſhowers which fell on the night of the 17th, will long be connected in the memories of the citizens of Philadelphia with the time of the death of the celebrated Dr. Franklin. Several pleuriſies appeared during this month; alſo a few caſes of meaſles. In the laſt week of the month, the influenza made its appearance. It was brought to the city from New-England, and affected, in its courſe, all the intermediate ſtates. Its ſymptoms were nearly the ſame as they were in the preceding autumn, but in many people it put on ſome

new appearances. Several perſons who were affected by it, had ſymptoms of madneſs, one of whom deſtroyed himſelf by jumping out of a window. Some had no cough, but very acute pains in the back and head. It was remarked that thoſe who had the diſeaſe chiefly in the breaſt the laſt year, complained now chiefly of their heads, while thoſe whoſe heads were affected formerly, now complained chiefly of their breaſts. In many, it put on the type of an intermitting fever. Several complained of conſtant chills, or conſtant ſweats; and ſome were much alarmed by an uncommon blue and dark colour in their hands. I ſaw one caſe of iſchuria, another of an acute pain in the rectum, a third of anaſarca, and a fourth of a palſy in the tongue and arms; all of which appeared to be anomalous ſymptoms of the Influenza. Sneezing, and pains in the ears and frontal ſinus, were leſs common now than they were in the fall; but a pain in the eye-balls was an univerſal ſymptom. Some had a pain in the one eye only, and a few had ſore eyes, and ſwellings in the face. Many women who had it, were affected by an irregular appearance of the catamenia. In two perſons whom I ſaw, the cough was inceſſant for three days, nor could it be compoſed by any other remedy than plentiful bleeding. A patient of Dr. Samuel Duffield's informed me after his recovery, that he had

had

had no other ſymptom of the diſeaſe than an efflorescence on his ſkin, and a large ſwelling in his groin, which terminated in a tedious abſceſs.

THE priſoners in the goal who had it in the autumn, eſcaped it this ſpring.

DURING the prevalence of this diſorder, I ſaw no ſign of any other epidemic.

IT declined ſenſibly about the firſt week in June, and after the 12th day of this month, I was not called to a ſingle patient in this diſorder.

THE remedies for it were the ſame as were uſed in the fall.

I USED bleeding in ſeveral caſes on the ſecond, third, and fourth days of the diſorder, where it had appeared to be improper in its firſt ſtage. The caſes which required bleeding were far from being general. I ſaw two inſtances of ſyncope of an alarming nature, after the loſs of ten ounces of blood; and I heard of one inſtance of a boy who died in half an hour after this evacuation.

I REMARKED that purges of all kinds worked more violently than uſual in this diſorder.

THE convaleſcence from it was very ſlow, and a general languor appeared to pervade the citizens for ſeveral weeks after it left the city.

THE month of December 1790 was extremely and uniformly cold. In the beginning of the month of January 1791, the weather moderated, and continued to be pleaſant, till the 17th, on which day the navigation of the Delaware, which had been completely obſtructed by the ice, was opened ſo as to admit of the arrival of ſeveral veſſels. During the month of December many people complained of *Colds*; but they were aſcribed wholly to the weather. In January four or five perſons in a family were affected by colds at the ſame time; which created a ſuſpicion of a return of the influenza. This ſuſpicion was ſoon confirmed by accounts of its prevailing in the neighbouring counties of Cheſter and Montgomery in Pennſylvania, and in the diſtant ſtates of Virginia and Rhode-Iſland. It did not affect near ſo generally as in the two former times of appearance. There was no difference in the method of treating it. While the common inflammatory diſeaſes of the winter, bore the lancet as uſual, it was remarked

ed that patients who were attacked by the influenza, did not bear bleeding in a greater proportion, or in a larger quantity than in the two former times of its appearance in the city.

I SHALL conclude this account of the Influenza by the following obſervations.

1. IT is as certainly a contagious diſeaſe as the meaſles or ſmall pox, and exiſts independently of the ſenſible qualities of the air. This is proved by its prevailing in every ſpecies of weather, and in ſucceſſive periods in neighbourhoods, which have been expoſed in the ſame inſtant to the ſame atmoſphere; alſo by whole families, and the tenants of gaols and hoſpitals frequently eſcaping it. It is not peculiar to the influenza not to be affected by the different ſtates of the weather. Dr. Patrick Ruſſel has proved, that the contagion of the plague is equally independent of the influence of the atmoſphere.

2. THE Influenza infects at the greateſt diſtance, paſſes with the utmoſt rapidity through a country, and affects the greateſt number of people in a given time, of any contagious diſeaſe in the world.

3. IT

3. It appears from the hiſtories of it which are upon record, that neither climate, nor the different ſtates of ſociety, have produced any *material* change in the diſorder. This will appear from comparing the account I have given, with the hiſtories of it which have lately been given by Dr. Grey, Dr. Hamilton, Dr. A. Fothergill, Mr. Chiſholm, and other modern phyſicians. It appears further, that even time itſelf has not been able materially to change the type of this diſorder. This is evident, from comparing modern accounts of it with thoſe which have been handed down to us by ancient phyſicians.

I have hinted in a former eſſay at the *diminutives* of certain diſeaſes. There is a ſpecies of Influenza, which is leſs violent and more local, than that which has been deſcribed. It generally prevails in the winter ſeaſon. It ſeems to originate from a morbid matter, generated in crowded and heated churches, and other aſſemblies of the people. I have ſeen a cold, or influenza, frequently univerſal in Philadelphia, which I have diſtinctly traced to this ſource. It would ſeem as if the ſame ſpecies of diſeaſes reſembled pictures, and that while ſome of them partook of the deep and vivid nature of moſaic work, others appeared like the feeble and tranſient impreſſions of water colours.

AN

INQUIRY

INTO THE

CAUSES OF THE INCREASE

OF

Bilious and Intermitting Fevers

IN

PENNSYLVANIA,

Read in the AMERICAN PHILOSOPHICAL SOCIETY,

December 16, 1785.

AN

INQUIRY, &c.

IT has been remarked, that Pennſylvania for ſome years paſt, has become more ſickly than formerly. Fevers, which a few years ago appeared chiefly on the banks of creeks and rivers, and in the neighborhood of mill-ponds, now appear in parts remote from them all, and in the higheſt ſituations. This change with reſpect to the healthineſs of our country, may be traced to the three following cauſes.

1. THE eſtabliſhment and increaſe of mill-ponds. There are whole counties in Pennſylvania in which intermittents

intermittents were unknown, until the waters in them were dammed, for the purpoſe of erecting mill-ponds.

2. THE cutting down of wood, under certain circumſtances, tends to render a country ſickly. It has been remarked, that intermittents on the ſhores of the Suſquehannah, have kept an exact pace with the paſſages which have been opened for the propagation of marſh effluvia, by cutting down the wood which formerly grew in its neighbourhood. I remember the time, when intermittents were known only within half a mile, in ſome places, of that river. They are now to be met with ten miles from it, in the ſame parts of the ſtate.

I BEG a diſtinction to be made here between *clearing* and *cultivating* a country. While clearing a country makes it ſickly, in the manner that has been mentioned, *cultivating* a country, that is, draining ſwamps, deſtroying weeds, burning bruſh, and exhaling the unwholſome and ſuperfluous moiſture of the earth, by means of frequent crops of grain, graſſes, and vegetables of all kinds, render it healthy. I could mention, in ſupport of theſe facts, ſeveral countries in the United States, which have paſſed through each of the ſtages that have been deſcribed. The firſt ſettlers received theſe countries

tries from the hands of nature pure and healthy.* Fevers ſoon followed their improvements, nor were they finally baniſhed, until the higher degrees of cultivation that have been named took place. I confine myſelf to thoſe countries only where the ſalutary effects of cultivation were not rendered abortive by the neighbourhood of mill-ponds.

A third cauſe of the late increaſe of bilious and intermitting fevers, muſt be ſought for in the different and unequal quantities of rain which have fallen within theſe laſt ſeven years. While our creeks and rivers, from the uniformity of our ſeaſons, were confined to ſteady bounds, there was little or no exhalation of febrile miaſmata from their ſhores. But the dry ſummers of 1780, 1781, and

* A Phyſician who travelled through part of Bedford county, in Pennſylvania, in the year 1782, informed me that he was witneſs of ſome country people having travelled twenty miles, to ſee whether it was poſſible for a German girl, who laboured under an intermittent, to be HOT and COLD at the ſame time. Even the ſwamps in the United States are healthy before they are cleared. In the Delaware State, labourers paſs whole ſummers and autumns in making ſhingles in the cedar ſwamps, without being affected by fevers or ſickneſs of any kind. Perſons who ſpend the warm months in the cedar and pine ſwamps in North-Carolina, are likewiſe equally free from diſeaſes.

and 1782, by reducing our creeks and rivers far below their ancient marks; while the wet ſprings of 1784 and 1785, by ſwelling them both beyond their natural heights, have, when they have fallen, as in the former caſe, left a large and extenſive ſurface of moiſt ground expoſed to the action of the ſun, and of courſe to the generation and exhalation of febrile miaſmata. The hiſtory of epidemics in foreign countries, favours this opinion of the cauſe of their increaſe in Pennſylvania. The inhabitants of Egypt are always healthy during the overflowing of the Nile. Their fevers appear only after the receſs of the river. It is remarkable that a wet ſeaſon is often healthy in low, while it is ſickly in hilly countries. The reaſon is obvious. In the former the rains entirely cover all the moiſt grounds, while in the latter, they fall only in ſufficient quantity to produce thoſe degrees of moiſture which favour febrile exhalations. The rains which fall in the ſummer are rendered harmleſs only by covering the *whole* ſurface of marſhy ground. The rains which fall in our ſtate after the middle of September, are ſo far from producing fevers, that they generally prevent them. The extraordinary healthineſs of the laſt autumn, I believe, was occaſioned by nothing but the extraordinary quantity of rain that fell during the autumnal months. The rain probably acts at this

ſeaſon

ſeaſon by diluting, and thus deſtroying, the febrile miaſmata that were produced by the heat and moiſture of the preceding ſummer. In ſupport of the truth of this third cauſe of the increaſe of fevers in Pennſylvania, I have only to add a fact lately communicated to me by Dr. Franklin. He informed me, that in his journey from Paſſey to Havre de Grace, laſt ſummer, he found the country through which he travelled, unuſually ſickly with fevers. Theſe fevers, it was generally ſuppoſed, were produced by the extrordinary dry weather, of which the public papers have given us ſuch melancholy and frequent accounts.

I COME now to ſuggeſt a few hints for obviating and preventing fevers, and for rendering our country again healthy. For this purpoſe, I beg leave to recommend, in the firſt place, the planting of trees around all our mill ponds, (beſides cleaning them occaſionally) in order to prevent the diſeaſes that have juſtly been aſcribed to them. Let the trees be planted in the greateſt number, and cloſeſt together, to leeward of the ordinary current of the ſummer and autumnal winds. I have known ſeveral inſtances of families being preſerved from fevers by an accidental copſe of wood ſtanding between a mill-pond and a dwelling-houſe, and that in caſes too where the houſe derived

ved no advantage from an high ſituation. The trees *around* or *near* a mill-pond, act perhaps in a ſmall degree *mechanically*. By ſheltering the pond from the action of the ſun, they leſſen exhalation, as well as obſtruct the paſſage of the vapors that are raiſed, to the adjacent parts. But they act likewiſe *chemically*. It has been demonſtrated that trees abſorb unhealthy air, and diſcharge it in a highly purified ſtate in the form of what is now called "dephlogiſticated" air. The willow tree, according to Mr. Ingenhauzs, has been found to purify air the moſt rapidly of any tree that he has ſubjected to his experiments. The rapidity of its growth, its early verdure, and the late fall of its leaf, all ſeem to mark it likewiſe as a tree highly proper for this purpoſe.

A SECOND method of preventing fevers, is to let the cultivation always keep pace with the *clearing* of our lands. Nature has in this inſtance, connected our duty, intereſt, and health together. Let every ſpot covered with moiſture from which the wood has been cut, be carefully drained, and afterwards ploughed and ſowed with graſs ſeed; let weeds of all kinds be deſtroyed, and let the waters be ſo directed as to prevent their ſtagnating in any part of their courſe.

THESE

THESE are the two principal means of extirpating intermitting and bilious fevers from our country, but as these means are slow in their operation, I shall subjoin a few directions for preventing fevers till the above remedies can take effect.

1. WHETHER the matter which produces fevers be of an organic nature, I do not pretend to determine, but it is certain, that *fire*, or the *smoke* or *heat* which issue from it, destroy the effects of marsh miasmata upon the human body; hence we find cities more healthy than country places, and the centre of cities more healthy than their suburbs in the sickly months. To derive the utmost possible benefit from this method of preventing sickness, I would advise large fires to be made every evening, of brush, between the spots from whence the exhalations are derived, and the dwelling house, and as near to the latter as is safe, and not disagreeable. This practice should be continued till the appearance of two or three frosts, for frosts, as well as heavy rains in the autumnal months, never fail to put a stop to the progress of intermittents.

DURING the sickly season, fires should be likewise kept in every room in the dwelling house, even in those cases where the heat of the weather makes

makes it neceſſary to keep the doors and windows open.

2. LET me adviſe my countrymen in ſickly ſituations, to prefer woollen and cotton to linen clothes in the ſummer and autumnal months. The moſt ſickly parts of the iſland of Jamaica have been rendered more healthy, ſince the inhabitants have adopted the uſe of woollen and cotton garments inſtead of linen.

DURING the late war, I knew many officers, both in the Britiſh and American armies, who eſcaped fevers in the moſt ſickly places, by wearing woollen ſhirts or waiſtcoats conſtantly next to their ſkins. I have heard the preſent diminution of the human body in ſtrength and ſize, compared with its ancient vigor and form, aſcribed in part to the introduction of linen garments. I am not diſpoſed to controvert this opinion, but I am ſure of the efficacy of woollen clothes in wet and cold climates in preventing fevers of all kinds. The parliament of Great Britain compels every body that dies within the iſland to be buried in a woollen ſhirt or winding ſheet. The law would be much wiſer if it compelled every body to wear woollen garments next to their ſkins during life, and linen after death.

3. The diet in the ſickly months ſhould be generous. Wine and beer ſhould be the drinks of this ſeaſon inſtead of ſpirits and water. I do not think that fruit and vegetables of any kind produce fevers, but as the ſeaſon of the year produces languor and weakneſs, a larger quantity of animal food than uſual is beſt calculated to oppoſe them. Salted meat, for this reaſon, is preferable to freſh meat. Food of all kinds eaten during the ſickly months, ſhould be well ſeaſoned.

4. The evening air ſhould be avoided as much as poſſible. Even the morning air before the ſun riſes, ſhould not be breathed, until the body has been fortified with a little ſolid aliment, or a *draught* of bitters. Theſe bitters ſhould be made of centaury, wormwood, camomile, or the bark of the willow or dogwood trees infuſed in *water*. Bitters made with ſpirits, or even wine, cannot be taken in a ſufficient quantity to do ſervice without producing intoxication, or the deadly habit of loving and drinking ſpirituous liquors.

5. Too much cannot be ſaid in favour of cleanlineſs, as means of preventing fevers. The body ſhould be bathed or waſhed frequently. It has been proved in the highlands of Jamaica, that adding ſalt to water, renders it more powerful in pre-

venting diſeaſes when applied to the body. Equal pains ſhould be taken to promote cleanlineſs in every ſpecies of apparel. Offal matters, eſpecially thoſe which are of a vegetable nature, ſhould be removed from the neighbourhood of a dwelling houſe. The dung of domeſtic animals, during its progreſs towards manure may be excepted from this direction. Nature, which made man and theſe animals equally neceſſary to each others ſubſiſtence, has kindly prevented any inconvenience from their living together. On the contrary, to repay the huſbandman for affording a ſhelter to theſe uſeful and helpleſs animals, nature has done more. She has endowed their dung with a power of deſtroying the effects of marſh exhalations, and of preventing fevers. The miſerable cottagers in Europe who live under the ſame roof, and in ſome inſtances in the ſame room with their cattle, are always healthy. In Philadelphia, fevers are leſs known in the neighbourhood of livery ſtables, than in any other part of the city. I could mention a family that has lived near thirty years near a livery ſtable in a ſickly part of the city, that has never known a fever but from the meaſles or ſmall-pox.

AN

INQUIRY

INTO THE

CAUSES AND CURE

OF

SORE LEGS.

AN

INQUIRY, &c.

HOWEVER trifling these complaints may appear, they compose a large class of the diseases of a numerous body of people. Hitherto the persons afflicted by them have been too generally abandoned to the care of empirics, either because the disease was considered as beneath the notice of physicians, or because they were unable to cure it. I would rather ascribe it to the latter, than to the former cause, for pride has no natural fellowship with the profession of medicine.

THE difficulty of curing sore legs has been confessed by physicians in every country. As far as my observations have extended, I am disposed to ascribe this difficulty to the uniform and indiscrimi-

nate

nate mode of treating them, occaſioned by the want of a theory which ſhall explain their proximate cauſe. I ſhall attempt in a few pages to deliver one, which however imperfect, will I hope lay a foundation for more ſucceſsful inquiries upon this ſubject hereafter.

I SHALL begin my obſervations upon this diſorder, by delivering and ſupporting the following propoſitions.

I. SORE LEGS are a diſeaſe of general debility, which, for the moſt part, is of the indirect kind. This I infer from the occupations and habits of the perſons who are moſt ſubject to them. They are day-labourers, and ſailors, who are in the habit of lifting great weights; alſo waſher-women, and all other perſons, who paſs the greateſt part of their time upon their feet. The blood veſſels, and muſcular fibres of the legs are thus overſtretched, by which means either a rupture, or ſuch a languid action in the veſſels is induced, as that an accidental wound from any cauſe, even from the ſcratch of a pin or the bite of a moſquito, will not eaſily heal. But labourers, ſailors, and waſher-women, are not the only perſons who are afflicted with ſore legs. Hard-drinkers of every rank and deſcription are likewiſe ſubject to them. Where

ſtrong

ſtrong drink, labour, and ſtanding long on the feet are united, they more certainly diſpoſe to ſore legs, than when they act ſeparately. In China, where the labour which is performed by brutes in other countries is performed by men, varices on the legs are very common among the labouring people. Perhaps, the reaſon why the debility induced in the legs produces varices inſtead of ulcers in theſe people, may be owing to their not adding the debilitating ſtimulus of ſtrong drink to that of exceſſive labour.

It is not extraordinary that the indirect debility produced by intemperance in drinking ardent ſpirits, ſhould appear firſt in the lower extremities. The indirect debility produced by intemperance in the uſe of wine, makes its firſt appearance in the form of gout, in the ſame part of the body. The gout, it is true, diſcovers itſelf moſt frequently in pain only, but there are caſes in which it has terminated in ulcers, and even mortifications on the legs.

II. Sore legs are a diſeaſe of the whole ſyſtem. This I infer,

1. From the cauſes which induce them, all of which

which act more or less upon every part of the body.

2. From their following or preceding diseases which obviously belong to the whole system. Fevers and dysenteries often terminate critically in this disorder; and the pulmonary consumption and apoplexy have often been preceded by the suppression of an habitual discharge from a sore leg. The two latter diseases have been ascribed to the translation of a morbific matter to the lungs or brain: But it is more rational to ascribe them to a previous debility in those organs, by which means their vessels were more easily excited into action and effusion by the stimulus of the plethora, induced upon the system in consequence of the confinement of the fluids formerly discharged from the leg in the form of pus. This plethora can do harm only where there is previous debility; for I maintain that the system (when the solids are exactly toned) will always relieve itself of a sudden preternatural accumulation of fluids by means of some natural emunctory. This has been often observed in the menorrhagia, which accompanies plentiful living in women, and in the copious discharges from the bowels and kidneys which follow a suppression of the perspiration.

3. I INFER it from their appearing almoſt univerſally in one diſeaſe, which is evidently a diſeaſe of the whole ſyſtem, viz. the ſcurvy.

4. FROM their becoming in ſome caſes the outlets of menſtrual blood, which is diſcharged in conſequence of a plethora which affects more or leſs every part of the female ſyſtem.

5. I INFER it from the *ſymptoms* of ſore legs, which are in ſome caſes febrile, and affect the pulſe in every part of the body with preternatural frequency or force. Theſe ſymptoms were witneſſed, in an eminent degree, in two of the patients who furniſhed ſubjects for clinical remarks in the Pennſylvania hoſpital in the courſe of the laſt winter.

6. I INFER that ſore legs are a diſeaſe of the whole ſyſtem, from the manner in which they are ſometimes cured by nature and art. They often prove the outlets of many general diſeaſes, and all the remedies which cure them, act more or leſs upon the whole ſyſtem.

IN all caſes of ſore legs there is a tonic and atonic ſtate of the whole ſyſtem. The ſame ſtate of exceſſive or deficient action takes place in the parts which

which are affected by the ſores. The remedies to cure them, therefore, ſhould be *general* and *local*.

In caſes where the arterial ſyſtem is affected by too much tone, the general remedies ſhould be,

I. Blood-letting. Of the efficacy of this remedy in diſpoſing ulcers ſuddenly to heal, the two clinical patients beforementioned, exhibited remarkable proofs laſt winter, in the preſence of all the ſtudents of medicine in the univerſity. The blood drawn was ſizy in both caſes. I have not the merit of having introduced this remedy into practice in the cure of ulcers. I learned it from Sir John Pringle. I have known it to be uſed with equal ſucceſs in a ſore breaſt, attended by pain and inflammation, after all the uſual remedies for that diſorder had been uſed to no purpoſe. I anticipate here a repetition of an objection to this remedy by perſons who cannot, at firſt ſight, reconcile exceſſive action in the arterial ſyſtem with the debility which prediſpoſes to it. I refer the reader for a defence of it, to what was ſaid upon the ſubject of bleeding in the inflammatory ſpecies of conſumption. It will only be neceſſary to add in this place, that indirect, like direct debility, when of ſhort duration, never fails to produce ſuch a degree of excitability, or vibratility (if I may be allowed to coin a word) in

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the blood-veſſels, as to diſpoſe them to be thrown into exceſſive action by the leaſt increaſe in the force or number of the ſtimuli which act upon the human body.

II. CENTLE PURGES.

III. NITRE. From fifteen to twenty grains of this medicine ſhould be given three times a-day.

IV. A TEMPERATE diet, and a total abſtinence from fermented and diſtilled liquors.

V. COOL and pure air.

THE *local* remedies in this ſtate of the ſyſtem ſhould be,

I. COLD water. Dr. Rigby has written largely in favour of this remedy when applied to local inflammations. From its good effects in allaying the inflammation which ſometimes follows the puncture which is made in the arm in communicating the ſmall pox, and from the ſudden relief it affords in the inflammatory ſpecies of the ophthalmia and in the piles, no one can doubt of its efficacy in ſore legs, accompanied by inflammation in thoſe veſſels, which are the immediate ſeat of the diſorder.

II. Soft poultices of bread and milk, or of bread moiſtened with lead water. Dr. Underwood's method of making a poultice of bread and milk ſhould be preferred in this caſe. He directs us firſt to boil the milk, then to powder the bread, and throw it into the milk, and after they have been intimately mixed, by being well ſtirred and boiled together, they ſhould be poured out and ſpread upon a rag, and a knife dipped in ſweet oil or lard, ſhould be run over them. The ſolidity and conſiſtence of the poultice is hereby better preſerved, than when the oil or lard is mixed with the bread and milk over the fire.

III. When the inflammation ſubſides, dry lint ſhould be applied to the ſore, and confined by means of a ſoft plaſter of wax and ſweet oil.

IV. Above all, reſt, and an horizontal poſture of the leg. Too much cannot be ſaid in favor of this remedy in this ſpecies of ſore legs. Nannoni, the famous Italian ſurgeon, ſums up the cure of ſore legs in three words, viz. "Tempo, ripoſo, e pazienza;" that is, in time, reſt and patience. A friend of mine, who was cured by this ſurgeon, of a ſore leg, about thirty years ago, informed me, that he confined him to his bed, during the greateſt part of the time that he was under his care.

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In ſore legs, attended by too little general and local action, the following remedies are proper.

I. Bark. It ſhould be uſed plentifully, but with a conſtant reference to the ſtate of the ſyſtem; for the changes in the weather, and other accidental circumſtances often produce ſuch changes in the ſyſtem, as to render its diſuſe for a ſhort time frequently neceſſary.

II. Mercury. This remedy has been ſuppoſed to act by altering the fluids, or by diſcharging a morbid matter from them, in curing ſore legs. But this is by no means the caſe. It appears to act as an univerſal ſtimulant; and if it prove moſt uſeful when it excites a ſalivation, it is only becauſe in this way it excites the moſt general action in the ſyſtem.

III. Mineral tonics—ſuch as the different preparations of iron, copper, and zinc.

IV. Gentle Exercise. Reſt, and a recumbent poſture of the body, ſo proper in the tonic, are both hurtful in this ſpecies of ſore legs. The efficacy of exerciſe, even of the active kind, in the cure of ſore legs, accompanied by deficient action in the veſſels, may eaſily be conceived from the

its good effects after gun-shot wounds which are mentioned by Dr. Jackson.* He tells us, that those British soldiers who had been wounded at the battle of Guilford, in North-Carolina, who were turned out of the military hospitals and followed the army, soonest recovered of their wounds. It was remarkable that if they delayed only a few days on the road, their wounds grew worse, or ceased to heal.

In the use of the different species of exercise the same regard should be had to the state of the system which was recommended in a former disorder.

V. A NUTRITIOUS and moderately stimulating diet, consisting of milk, saccharine vegetables, animal food, malt-liquors, and wine.

WORT has done great service in sore legs. I am at a loss to determine whether it acts by conveying a quantity of gently stimulating and nutritious matter into the system, or by correcting a scorbutic diathesis in the blood. The manner in which I have directed it to be prepared and taken is as follows———To three or four heaped tablespoonsful of the malt, finely powdered and sifted, add

* Medical Journal, 1790.

add two table ſpoonsful of brown ſugar, and three or four of Madeira, Sherry, or Liſbon wine, and a quart of boiling water. After they have ſtood a few hours, it may be drunken liberally by the patient, ſtirring it each time before he takes it, ſo that the whole ſubſtance of the malt may be conveyed into the ſtomach. A little lime-juice may be added, if the patient requires it, to make it more pleaſant. The above quantity may be taken once, twice, or three times a day at the pleaſure of the patient, or according to the indication of his diſorder.

VI. Opium. This remedy is not only uſeful in eaſing the pain of a ſore leg, but co-operates with other cordial medicines in invigorating the whole ſyſtem.

The *local* applications ſhould conſiſt of ſuch ſubſtances as are gently eſcarotic, and which excite an action in the torpid veſſels of the affected part. Arſenic, precipitate, and blue vitriol, have all been employed with ſucceſs for this purpoſe. Dr. Griffitts informed me, that he has frequently accompliſhed the ſame thing in the Diſpenſary by applications of tartar emetic. They ſhould all be uſed, if neceſſary, in ſucceſſion to each other; for there is often the ſame idioſyncraſy in a ſore leg to certain topical applications, that there is in the ſtomach

mach to certain aliments. After the uſe of theſe remedies, aſtringents and tonics ſhould be applied, ſuch as an infuſion of Peruvian, or white-oak bark; the water in which the ſmiths extinguiſh their irons, lime-water, bread dipped in a weak ſolution of green vitriol (ſo much commended by Dr. Underwood) and compreſſes wetted with brandy, or ardent ſpirits of any kind.

TIGHT bandages are likewiſe highly proper here. The laced ſtocking has been much uſed. It is made of ſtrong coarſe linen. Dr. Underwood gives ſeveral good reaſons for preferring a flannel roller to the linen ſtocking. It ſets eaſier on the leg, and yields to the ſwelling of the muſcles in walking.

IN ſcorbutic ſores on the legs, navy ſurgeons have ſpoken in high terms of an application of a mixture of lime-juice and melaſſes. Mr. Gilleſpie commends the uſe of lime or lemon-juice alone, and aſcribes many cures to it in the Britiſh navy during the late war, after every common application had been uſed to no purpoſe.*

IT is of the utmoſt conſequence in the treatment of fore legs, to keep them clean, by frequent dreſſings

* Medical Journal, Vol. VI.

and waſhings. The ſucceſs of old women is oftener derived from their great attention to cleanlineſs, in the management of ſore legs, than to any ſpecifics they poſſeſs which are unknown to phyſicians.

When ſore legs are kept from healing by affections of the bone, the treatment ſhould be ſuch as is recommended by practical writers on ſurgery.

I shall conclude this inquiry by four obſervations, which are naturally ſuggeſted by what has been delivered upon this diſorder.

1. If it has been proved that ſore legs are, in moſt caſes, diſeaſes of the whole ſyſtem, is it not proper to inquire, whether many other diſeaſes ſuppoſed to be local are not in like manner diſeaſes of the whole ſyſtem? And if ſore legs have been cured by general remedies, is it not proper to uſe them more frequently in other local diſeaſes?—I am led to make this remark by having ſeen two inſtances of tumors, the one on the breaſt, and the other in the proſtate gland, nearly cured by long journies.

2. If there be two ſtates of action in the arteries in ſore legs, it becomes us to inquire, whether the ſame oppoſite ſtates of action do not take place in many diſeaſes in which they are not ſuſpected. I have

before obſerved, that they occur in the ſcrofula. It would be eaſy to prove, that they exiſt in ſeveral other local diſeaſes.

3. If the efficacy of the remedies for ſore legs which have been mentioned, depends upon their being accommodated exactly to the ſtate of the arterial ſyſtem, and if this ſyſtem be liable to frequent changes, does it not become us to be more attentive to the ſtate of the pulſe in this diſorder than is commonly ſuppoſed to be neceſſary by phyſicians?——Indeed, if one of the principles I have aimed to eſtabliſh in this and ſeveral of the foregoing eſſays be juſt, that is, that all preſcriptions ſhould be ſuited to the *ſtate*, and not to the *name*, of a diſeaſe, it follows that ſucceſs in the practice of phyſic will depend chiefly upon the occaſional change of the doſe, or quality of a medicine with the changing ſtate of the whole ſyſtem.

4. It has been a misfortune in medicine, as well as in other ſciences, for men to aſcribe effects to one cauſe, which ſhould be aſcribed to many. Hence diſeaſes have been attributed excluſively to morbid affections of the fluids by ſome, and of the muſcles, and nerves by others. Unfortunately the morbid ſtates of the arterial ſyſtem, and the influence of thoſe ſtates upon the brain—

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the nerves—the muſcles—the lymphatics—the glands—the viſcera—the alimentary canal—and the ſkin, as well as the reciprocal influence of the morbid ſtates of each of thoſe parts of the body upon the arteries, and upon each other, have been too much neglected in moſt of our ſyſtems of phyſic. I conſider the pathology of the arterial ſyſtem as a mine. It was firſt diſcovered by Dr. Cullen. The man who attempts to explore it, will probably impoveriſh himſelf by his reſearches; but the men who come after him, will certainly obtain from it a treaſure which cannot fail of adding greatly to the riches of medicine.

AN

ACCOUNT

OF THE

State of the BODY and MIND in OLD AGE;

WITH OBSERVATIONS ON ITS

DISEASES, *and their* REMEDIES.

ACCOUNT

An ACCOUNT, &c.

MOST of the facts which I ſhall deliver upon this ſubject, are the reſult of obſervations made during the laſt five years, upon perſons of both ſexes, who had paſſed the 80th year of their lives. I intended to have given a detail of the names—manner of life—occupations—and other circumſtances of each of them; but, upon a review of my notes, I found ſo great a ſameneſs in the hiſtory of moſt of them, that I deſpaired, by detailing them, of anſwering the intention which I have purpoſed in the following eſſay. I ſhall, therefore, only deliver the facts and principles which are the reſult of the inquiries and obſervations I have made upon this ſubject.

I SHALL

I. I SHALL Mention the circumſtances which favour the attainment of longevity.

II. I SHALL mention the phænomena of body and mind which attend it: and,

III. I SHALL enumerate its peculiar diſeaſes, and the remedies which are moſt proper to remove, or moderate them.

I. THE circumſtances which favour longevity, are,

1. *Deſcent from long-lived Anceſtors.* I have not found a ſingle inſtance of a perſon, who has lived to be 80 years old, in whom this was not the caſe. In ſome inſtances I found the deſcent was only from one, but in general, it was from both parents. The knowledge of this fact may ſerve, not only to aſſiſt in calculating what are called the chances of lives, but it may be made uſeful to a phyſician. He may learn from it to cheriſh hopes of his patients in chronic, and in ſome acute diſeaſes, in proportion to the capacity of life they have derived from their anceſtors.*

2. *Tem-*

* Dr. Franklin, who died in his 84th year, was deſcended from long-lived parents. His father died at 89, and his mother

2. *Temperance in Eating and Drinking.* To this remark I found ſeveral exceptions. I met with one man of 84 years of age, who had been intemperate in eating; and four or five perſons who had been intemperate in drinking ardent ſpirits. They had all been day-labourers, or had deferred drinking until they began to feel the languor of old age. I did not meet with a ſingle perſon who had not, for the laſt forty or fifty years of their lives, uſed tea, coffee, and bread and butter twice a day as part of their diet. I am diſpoſed to believe that thoſe articles of diet do not materially affect the duration of human life, although they evidently impair the ſtrength of the ſyſtem. The duration of life does not appear to depend ſo much upon the ſtrength of the body, or upon the quantity of its excitability, as upon an exact accommodation of ſtimuli to each of them. A watch ſpring will laſt as long as an anchor, provided the forces which are

mother at 87. His father had 17 children by two wives. The Doctor informed me that he once ſat down as one of 11 adult ſons and daughters at his father's table. In an excurſion he once made to that part of England from whence his family migrated to America, he diſcovered in a grave-yard, the tomb-ſtones of ſeveral perſons of his name, who had lived to be very old. Theſe perſons he ſuppoſed to have been his anceſtors.

are capable of deſtroying both, are always in an exact ratio to their ſtrength. The uſe of tea and coffee in diet ſeems to be happily ſuited to the change which has taken place in the human body, by ſedentary occupations, by which means leſs nouriſhment and ſtimulus are required than formerly, to ſupport animal life.

3. The *Moderate exerciſe of the Underſtanding.* It has long been an eſtabliſhed truth, that literary men (other circumſtances being equal) are longer lived than other people. But it is not neceſſary that the underſtanding ſhould be employed upon philoſophical ſubjects to produce this influence upon human life. Buſineſs, politics, and religion, which are the objects of attention of men of all claſſes, impart a vigour to the underſtanding, which, by being conveyed to every part of the body, tends to produce health and long life.

4. *Equanimity of temper.* The violent and irregular action of the paſſions tends to wear away the ſprings of life.

Persons who live upon annuities in Europe have been obſerved to be longer lived, in equal circumſtances, than other people. This is probably occaſioned by their being exempted, by the certainty of their ſubſiſtence from thoſe fears of want

want which ſo frequently diſtract the minds, and thereby weaken the bodies of old people. Life-rents have been ſuppoſed to have the ſame influence in prolonging life. Perhaps the *deſire of life*, in order to enjoy for as long a time as poſſible, that property which cannot be enjoyed a ſecond time by a child or relation, may be another cauſe of the longevity of perſons who live upon certain incomes. It is a fact, that the deſire of life is a very powerful ſtimulus in prolonging it, eſpecially when that deſire is ſupported by hope. This is obvious to phyſicians every day. Deſpair of recovery, is the beginning of death in all diſeaſes.

But obvious and reaſonable as the effects of equanimity of temper are upon human life, there are ſome exceptions in favor of paſſionate men and women having attained to a great age. The morbid ſtimulus of anger, in theſe caſes, was probably obviated by leſs degrees, or leſs active exerciſes of the underſtanding, or by the defect, or weakneſs of ſome of the other ſtimuli which keep up the motions of life.

5. *Matrimony.* In the courſe of my inquiries, I met with only one perſon beyond eighty years of age who had never been married.——I met with ſeveral women who had borne from 10

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to 20 children, and ſuckled them all. I met with one woman, a native of Herefordſhire in England, who is now in the 100th year of her age, who bore a child at 60, menſtruated till 80, and frequently ſuckled two of her children (though born in ſucceſſion to each other) at the ſame time. She had paſſed the greateſt part of her life over a waſhing-tub.

6. I HAVE not found *Sedentary Employments* to prevent long life, where they are not accompanied by intemperance in eating or drinking. This obſervation is not confined to literary men, nor to women only, in whom longevity without much exerciſe of body has been frequently obſerved. I met with one inſtance of a weaver; a ſecond of a ſilver-ſmith; and a third of a ſhoemaker, among the number of old people, whoſe hiſtories have ſuggeſted theſe obſervations.

7. I HAVE not found that *acute*, nor that all *chronic* diſeaſes ſhorten human life. Dr. Franklin had two ſucceſſive vomicas in his lungs before he was 40 years old. I met with one man beyond 80, who had ſurvived a moſt violent attack of the yellow fever; a ſecond who had had ſeveral of his bones fractured by falls, and in frays; and many who had been frequently affected by intermittents. I met

met with one man of 86, who had all his life been subject to syncope; another who had for 50 years been occasionally affected by a cough;* and two instances of men who had been afflicted for forty years with obstinate head-achs.† I met with only one person beyond 80, who had ever been affected by a disorder in the *stomach*; and in him, it arose from an occasional rupture. Mr. John Strangeways Hutton, of this city, who died last year, in the 109th year of his age, informed me, that he had never puked in his life. This circumstance is the more remarkable as he passed several years at sea when a young man.‡ These facts may serve to extend our ideas of the importance of

* This man's only remedy for his cough, was the fine powder of dry Indian turnip, and honey.

† Dr. Thiery says, That he did not find the itch, or slight degrees of the leprosy to prevent longevity. Observations de Physique, et de Medicine faites en differens leaux de L'Espagne. Vol. II. p. 171.

‡ The venerable old man, whose history first suggested this remark, was born in New-York in the year 1684—His grandfather lived to be 101, but was unable to walk for thirty years before he died, from an excessive quantity of fat. His mother died at 91. His constant drinks were water, beer, and cyder. He had a fixed dislike to spirits of all kinds. His appetite was good, and he ate plentifully during the

of a healthy ſtate of the ſtomach in the animal œconomy; and thereby to add to our knowledge in the prognoſis of diſeaſes, and in the chances of human life.

8. I HAVE not found the *loſs of teeth* to affect the duration of human life, ſo much as might be expected. Edward Drinker, who lived to be 103 years old, loſt his teeth thirty years before he died from drawing the hot ſmoke of tobacco into his mouth through a ſhort pipe.

DR. SAYRE, of New-Jerſey, to whom I am indebted for ſeveral very valuable hiſtories of old perſons, mentions one man aged 81, whoſe teeth began to decay at 16, and another of 90, who loſt his teeth thirty years before he ſaw him. The gums

the laſt years of his life. He ſeldom drank any thing between his meals. He was never intoxicated but twice in his life, and that was when a boy, and at ſea, where he remembers perfectly well to have celebrated by a feu de joye the birth day of Queen Ann. He was formerly afflicted with the head-ach, and giddineſs, but never had a fever, except from the ſmall-pox, in the courſe of his life. His pulſe was ſlow, but regular. He had been twice married. By his firſt wife he had 8, and by his ſecond 17 children. One of them lived to be 83 years of age. He was about five feet nine inches in height, of a ſlender make, and carried an erect head to the laſt year of his life.

gums, by becoming hard, perform, in part, the office of teeth: But may not the gaſtric juice of the ſtomach, like the tears and urine, become acrid by age, and thereby ſupply, by a more diſſolving power, the defect of maſtication from the loſs of teeth? Analogies might eaſily be adduced from ſeveral operations of nature, which go forward in the animal œconomy, which render this ſuppoſition highly probable.

9. I HAVE not obſerved *Baldneſs*, or *Grey Hairs*, occurring in early or middle life, to prevent old age. In one of the hiſtories furniſhed me by Dr. Sayre, I find an account of a man of 81, whoſe hair began to aſſume a ſilver colour when he was only one and twenty years of age.

I SHALL conclude this head by the following remark——

NOTWITHSTANDING there appears in the human body a certain capacity of long life, which ſeems to diſpoſe it to preſerve its exiſtence in every ſituation; yet this capacity does not always protect it from premature deſtruction; for among the old people whom I examined, I ſcarcely met with one who had not loſt brothers or ſiſters, in early and middle life,

life, who were born under circumſtances equally favourable to longevity with themſelves.

II. I COME now to mention ſome of the phænomena of the body and mind which occur in old age.

1. THERE is a great ſenſibility to *cold* in all old people. I met with an old woman of 84, who ſlept conſtantly under three blankets and a coverlit during the hotteſt ſummer months. The ſervant of prince de Beaufremont, who came from Mount Jura to Paris at the age of 121, to pay his reſpects to the firſt national aſſembly of France, ſhivered with cold in the middle of the dog days, when he was not near a good fire. The national aſſembly directed him to ſit with his hat on, in order to defend his head from the cold.

2. IMPRESSIONS made upon the *ears* of old people, excite ſenſation and reflexion much quicker than when they are made upon their eyes. Mr. Hutton informed me, that he had frequently met his ſons in the ſtreet without knowing them until they had ſpoken to him. Dr. Franklin informed me that he rcognized his friends, after a long abſence from them, firſt by their voices. This fact

does not contradict the common opinion, upon the subject of memory, for the recollection in these instances, is the effect of what is called reminiscence, which differs from memory in being excited only by the renewal of the impression which at first produced the idea which is revived.

2. The *appetite* for food is generally increased in old age. The famous Parr, who died at 152, ate heartily in the last week of his life. The kindness of nature, in providing this last portion of earthly enjoyments for old people, deserves to be noticed. It is remarkable, that they have, like children, a frequent recurrence of appetite, and sustain with great uneasiness the intervals of regular meals. The observation, therefore, made by Hippocrates, that middle-aged people are more affected by abstinence than those who are old, is not true. This might easily be proved by many appeals to the records of medicine; but old people differ from children, in preferring *solid* to liquid aliment. From inattention to this fact, Dr. Mead has done great mischief by advising old people, as their teeth decayed or perished, to lessen the quantity of their solid, and to increase the quantity of their liquid food. This advice is contrary to nature, and experience, and I have heard of two old persons who destroyed themselves by following it. The circulation of the blood is supported in old

people chiefly by the ſtimulus of aliment. The action of liquids of all kinds upon the ſyſtem is weak, and of ſhort continuance, compared with the durable ſtimulus of ſolid food. There is a gradation in the action of this food upon the body. Animal matters are preferred to vegetable; the fat of meat, to the lean, and ſalted meat to freſh, by moſt old people. I have met with but few old people who retained an appetite for milk. It is remarkable, that a leſs quantity of *ſtrong drink* produces intoxication in old people than in perſons in the middle of life. This depends upon the recurrence of the ſame ſtate of the ſyſtem, with reſpect to excitability, which takes place in childhood. Many old people, from an ignorance of this fact, have made ſhipwreck of characters which have commanded reſpect in every previous ſtage of their lives. From the ſame recurrence of the excitability of childhood in their ſyſtems, they commonly drink their tea and coffee much weaker than in early or middle life.

3. The *pulſe* is generally full, and frequently affected by pauſes in its pulſations when felt in the wriſts of old people. A regular pulſe in ſuch perſons indicates a diſeaſe, as it ſhews the ſyſtem to be under the impreſſion of a preternatural ſtimulus of ſome kind. This obſervation was ſuggeſted to me

above

above twenty years ago by Morgagni, and I have often profited by it in attending old people. The pulſe in ſuch patients is an uncertain mark of the nature or degree of an acute diſeaſe. It ſeldom partakes of the quickneſs or convulſive action of the arterial ſyſtem, which attends fever in young or middle-aged people. I once attended a man of 77 in a fever of the bilious kind, which confined him for eight days to his bed, in whom I could not perceive the leaſt quickneſs or morbid action in his pulſe until four and twenty hours before he died.

4. The marks of old age appear earlier, and are more numerous in perſons who have combined with hard labour, a vegetable or ſcanty diet, than in perſons who have lived under oppoſite circumſtances. I think I have obſerved theſe marks of old age to occur ſooner, and to be more numerous in the German, than in the Engliſh or Iriſh citizens of Pennſylvania. They are likewiſe more common among the inhabitants of country places, than of cities, and ſtill more ſo among the Indians of North America, than among the inhabitants of civilized countries.

5. Old men tread upon the *whole baſe* of their feet at once in *walking*. This is perhaps one reaſon why they wear out fewer ſhoes, under the ſame cir-

cumſtances of conſtant uſe, than young people, who by treading on the poſterior, and riſing on the anterior part of their feet, expoſe their ſhoes to more unequal preſſure and friction. The advantage derived to old people from this mode of walking is very obvious. It leſſens that diſpoſition to totter which is always connected with weakneſs:—hence we find the ſame mode of walking is adopted by habitual drunkards, and is ſometimes from habit practiſed by them, when they are not under the influence of ſtrong drink.

6. THE *memory* is the firſt faculty of the mind which fails in the decline of life. While recent events paſs through the mind without leaving an impreſſion upon it, it is remarkable that the long forgotten events of childhood and youth are recalled and diſtinctly remembered.

I MET with a ſingular inſtance of a German woman, who had learned to ſpeak the language of our country after ſhe was forty years of age, who had forgotten every word of it after ſhe had paſſed her 80th year, but ſpoke the German language as fluently as ever ſhe had done. The memory decays ſooneſt in hard drinkers. I have obſerved ſome ſtudious men to ſuffer a decay of their memories, but never of their underſtandings. Among theſe,

was

was the late Anthony Benezet of this city. But even this infirmity did not abate the chearfulneſs, or leſſen the happineſs of this pious philoſopher, for he once told me, when I was a young man, that he had a conſolation in the decay of his memory, which gave him a great advantage over me. "You can read a good book (ſaid he) with pleaſure but *once*, but when I read a good book, I ſo ſoon forget the contents of it, that I have the pleaſure of reading it over and over; and every time I read it, it is alike new and delightful to me."—The celebrated Dr. Swift was one of thoſe few ſtudious men, who have exhibited marks of a decay of underſtanding in old age; but it is judiciouſly aſcribed by Dr. Johnſon to two cauſes which reſcue books, and the exerciſe of the thinking powers, from having had any ſhare in inducing that diſeaſe upon his mind. Theſe cauſes were, a raſh vow which he made when a young man, never to uſe ſpectacles, and a ſordid ſeclusion of himſelf from company, by which means he was cut off from the uſe of books, and the benefits of converſation, the abſence of which left his mind without its uſual ſtimulus—hence it collapſed into a ſtate of fatuity. It is probably owing to the conſtant exerciſe of the underſtanding, that literary men poſſeſs that faculty of the mind in a vigorous ſtate in extreme old age. The ſame cauſe accounts for old people preſerving their

their intellects longer in cities, than in country places. They enjoy society upon such easy terms in the former situation, that their minds are kept more constantly in an excited state by the acquisition of new, or the renovation of old ideas, by means of conversation.

7. I DID not meet with a single instance in which the moral or religious faculties were impaired in old people. I do not believe, that these faculties of the mind are preserved, by any supernatural power, but wholly by the constant and increasing exercise of them in the evening of life. In the course of my inquiries, I heard of a man of 101 years of age, who declared that he had forgotten every thing he had ever known, except his GOD. I found the moral faculty, or a disposition to do kind offices, to be exquisitely sensible in several old people, in whom there was scarcely a trace left of memory or understanding.

8. DREAMING is universal among old people. It appears to be brought on by their imperfect sleep, of which I shall say more hereafter.

9. I MENTIONED formerly the sign of a *second childhood* in the state of the appetite in old people. It appears further,—1. In the marks which slight

contusions

contuſions or impreſſions leave upon their ſkins. 2. In their being ſoon fatigued by walking or exerciſe, and in being as ſoon refreſhed by reſt. 3. In their diſpoſition, like children, to detail immediately every thing they ſee and hear. And, 4. In their aptitude to ſhed tears; hence they are unable to tell a ſtory that is in any degree diſtreſſing without weeping. Dr. Moore takes notice of this peculiarity in Voltaire, after he had paſſed his 80th year. He wept conſtantly at the recital of his own tragedies. This feature in old age did not eſcape Homer. Old Menelaus wept ten years after he returned from the deſtruction of Troy, when he ſpoke of the death of the heroes who periſhed before that city.

10. It would be ſufficiently humbling to human nature, if our bodies exhibited in old age the marks only of a ſecond childhood; but human weakneſs deſcends ſtill lower. I met with an inſtance of a woman between 80 and 90, who exhibited the marks of a *ſecond infancy*, by ſuch a total decay of her mental faculties as to loſe all conſciouſneſs in diſcharging her alvine and urinary excretions. In this ſtate of the body, a diſpoſition to ſleep, ſucceeds the wakefulneſs of the firſt ſtages of old age. Dr. Haller mentions an inſtance of a very old man who

who ſlept twenty, out of every twenty-four hours during the few laſt years of his life.

11. The diſpoſition in the ſyſtem to *renew* certain parts in extreme old age, has been mentioned by ſeveral authors. Many inſtances are to be met with in the records of medicine of the ſight* and hearing having been reſtored, and even of the teeth having been renewed in old people a few years before death. Theſe phenomena have led me to ſuſpect, that

* There is a remarkable inſtance of the ſight having been reſtored after it had been totally deſtroyed in an old man near Reading in Pennſylvania. My brother, Jacob Ruſh, furniſhed me with the following account of him in a letter from Reading, dated June 23, 1792.——

"An old man of 84 years of age, of the name of Adam Riffle, near this town, gradually loſt his ſight in the 68th year of his age, and continued entirely blind for the ſpace of twelve years. About four years ago his ſight returned, without making uſe of any means for the purpoſe, and without any viſible change in the appearance of the eyes, and he now ſees as well as ever he did. I have ſeen the man, and have no doubt of the fact. He is at this time ſo hearty, as to be able to walk from his houſe to Reading, (about three miles) which he frequently does in order to attend church. I ſhould obſerve, that during both the gradual loſs, and recovery of his ſight, he was no ways affected by ſickneſs, but on the contrary enjoyed his uſual health. I have this account from his daughter and ſon-in-law, who live within a few doors of me."

that the antediluvian age was attained by the frequent renovation of different parts of the body, and that when they occur, they are an effort of the cauſes which ſupport animal life, to produce antediluvian longevity, by acting upon the revived excitability of the ſyſtem.

12. THE *fear* of death appears to be much leſs in old age, than in early, or middle life. I met with many old people who ſpoke of their diſſolution with compoſure, and with ſome who expreſſed earneſt deſires to lie down in the grave. This indifference to life, and deſire for death (whether they ariſe from ſatiety in worldly purſuits and pleaſures, or from a deſire of being relieved from pain) appear to be a wiſe law in the animal œconomy, and worthy of being claſſed with thoſe laws which accommodate the body and mind of man to all the natural evils, to which, in the common order of things, they are neceſſarily expoſed.

III. I COME now briefly to enumerate the diſeaſes of old age, and the remedies which are moſt proper to remove, or to mitigate them.

THE diſeaſes are chronic and acute. The CHRONIC are,

1. WEAK-

1. Weakness of the *knees* and *ankles*, a leſſened ability to walk, and tremors in the head and limbs.

2. Pains *in the bones*, known among noſological writers by the name of rheumitalgia.

3. Involuntary *flow of tears*, and of mucus from the noſe.

4. Difficulty *of breathing*, and a ſhort *cough*, with copious expectoration. A weak, or hoarſe voice generally attends this cough.

5. Costiveness.

6. An *inability to retain the urine* as long as in early or middle life. Few perſons beyond 60 paſs a whole night without being obliged to diſcharge their urine *. Perhaps the ſtimulus of this liquor in the bladder may be one cauſe of the univerſality of dreaming among old people. It is certainly a frequent cauſe of dreaming in perſons in early and mid dle

* I met with an old man who informed me, that if from any accident he retained his urine after he felt an inclination to diſcharge it, he was affected by a numbneſs, accompanied by an uneaſy ſenſation in the palms of his hands.

middle life : this I infer, from its occurring chiefly in the morning when the bladder is moſt diſtended with urine. There is likewiſe an inability in old people to diſcharge their urine as quickly as in early life. I think I have obſerved this to be among the firſt ſymptoms of the declenſion of the ſtrength of the body by age.

7th. WAKEFULNESS. This is probably produced in part by the action of the urine upon the bladder ; but ſuch is the excitability of the ſyſtem in the firſt ſtages of old age, that there is no pain ſo light, no anxiety ſo trifling, and no ſound ſo ſmall, as not to produce wakefulneſs in old people. It is owing to their imperfect ſleep, that they are ſometimes as unconſcious of the moment of their paſſing from a ſleeping to a waking ſtate, as young and middle aged people are of the moment in which they paſs from the waking to a ſleeping ſtate. Hence we ſo often hear them complain of paſſing ſleepleſs nights. This is no doubt frequently the caſe, but I am ſatisfied, from the reſult of an inquiry made upon this ſubject, that they often ſleep without knowing it, and that their complaints in the morning, of the want of ſleep, ariſe from ignorance, without the leaſt intention to deceive.

8. *Giddineſs.*

8. *Giddineſs.*

9. *Deafneſs.*

10. *Imperfect viſion.*

THE ACUTE diſeaſes moſt common among old people, are

1. *Inflammation of the eyes.*

2. THE *pnuemonia notha*, or baſtard peripneumony.

3. THE *colic.*

4. *Palſy* and *apoplexy.*

5. THE *piles.*

6. A *difficulty* in *making water.*

7. *Quartan fever.*

ALL the diſeaſes of old people, both chronic and acute, originate in debility. The remedies for the former, where no morbid action takes place in the ſyſtem, are ſtimulants. The firſt of theſe is,

I. HEAT. The ancient Romans prolonged life by retiring to Naples, as ſoon as they felt the infirmities of age coming upon them. The aged Portugueſe imitate them, by approaching the mild ſun of Brazil, in South America. But heat

heat may be applied to the torpid bodies of old people artificially—1ſt. By means of the *warm bath*. Dr. Franklin owed much of the cheerfulneſs and general vigor of body and mind which characterized his old age, to his regular uſe of this remedy. It diſpoſed him to ſleep, and even produced a reſpite from the pain of the ſtone, with which he was afflicted during the laſt years of his life.

2. HEAT may be applied to the bodies of old people by means of *ſtove rooms*. The late Dr. Dewit of Germantown, who lived to be near an 100 years of age, ſeldom breathed an air below 72°, after he became an old man. He lived conſtantly in a ſtove room.

3. *Warm cloathing*, more eſpecially warm bedclothes, are proper to preſerve or increaſe the heat of old people. From the neglect of the latter, they are often found dead in their beds in the morning, after a cold night, in all cold countries. The late Dr. Chovet, of this city, who lived to be 85 ſlept in a baize night gown, under eight blankets, and a coverlet, in a ſtove room, many years before he died. The head ſhould be defended in old people by means of woollen, or fur caps, in the night, and by wigs and hats during the day, in cold

cold weather. Theſe artificial coverings will be the more neceſſary, where the head has been deprived of its natural covering. Great pains ſhould be taken likewiſe to keep the feet dry and warm, by means of thick ſhoes.* To theſe modes of applying and confining heat to the bodies of old people, a young bed-fellow has been added; but I conceive the three artificial modes which have been recommended, will be ſufficient without the uſe of one, which cannot be ſucceſsfully employed without a breach of delicacy or humanity.

II. To keep up the action of the ſyſtem, *generous diet* and *drinks* ſhould be given to old people. For

* I met with one man above 80, who defended his feet from moiſture by covering his ſhoes in wet weather with melted wax; and another who, for the ſame purpoſe, covered his ſhoes every morning with a mixture compoſed of the following ingredients melted together—Lintſeed oil a pound, mutton ſuet eight ounces, bees-wax ſix ounces, and roſin four ounces. The mixture ſhould be moderately warmed, and then applied not only to the upper leather, but to the ſoles of the ſhoes. This compoſition, the old gentleman informed me, was extracted from a book entitled "The complete Fiſherman," publiſhed in England in the reign of queen Elizabeth. He had uſed it for twenty years in cold and wet weather, with great benefit, and ſeveral of his friends who had tried it, ſpoke of its efficacy in keeping the feet dry, in high terms.

For a reaſon mentioned formerly, they ſhould be indulged in eating between the ordinary meals of families. Wine ſhould be given to them in moderation. It has been emphatically called the milk of old age.

III. YOUNG COMPANY ſhould be preferred by old people to the company of perſons of their own age. I think I have obſerved old people to enjoy better health and ſpirits, when they have paſſed the evening of their lives in the families of their children, where they have been ſurrounded by grand children, than when they lived by themſelves. Even the ſolicitude they feel for the welfare of their deſcendants contributes to invigorate the circulation of the blood, and thereby to add fuel to the lamp of life.

IV. GENTLE EXERCISE. This is of great conſequence in promoting the health of old people. It ſhould be moderate, regular, and always in fair weather.

V. CLEANLINESS. This ſhould by no means be neglected. The dreſs of old people ſhould not only be clean, but more elegant than in youth or middle life. It ſerves to divert the eye of ſpectators from obſerving the decay and deformity of

the body, to view and admire that which is always agreeable to it.

VI. To abate the pains of the chronic rheumatism, and the uneasiness of the old man's cough (as it is called); also to remove wakefulness, and to restrain, during the night, a troublesome inclination to make water, OPIUM may be given with great advantage. Chardin informs us, that this medicine is frequently used in the eastern countries to abate the pains and weaknesses of old age, by those people who are debarred the use wine by the religion of Mahomet.

I HAVE nothing to say upon the acute diseases of old people, but what is to be found in most of our books of medicine, except to recommend BLEEDING in those of them which are attended with plethora, and an inflammatory action in the pulse. The degrees of appetite which belong to old age, the quality of the food taken, and the sedentary life which is generally connected with it, all concur to produce that state of the system, which requires the above evacuation. I am sure that I have seen many of the chronic complaints of old people mitigated by it, and I have more than once seen it used with obvious advantage in their inflammatory diseases. These affections I have observ-

ed to be more fatal among old people than is generally ſuppoſed. An inflammation of the lungs, which terminated in an abſceſs, deprived the world of Dr. Franklin. Dr. Chovet died of an inflammation in his liver. The blood drawn from him a few days before his death was ſizy, and ſuch was the heat of his body, produced by his fever, that he could not bear more covering, (notwithſtanding his former habits of warm cloathing) than a ſheet in the month of January.

DEATH from old age is the effect of a gradual palſy. It ſhews itſelf firſt in the eyes and ears in the decay of ſight and hearing—it appears next in the urinary bladder, in the limbs and trunk of the body, then in the ſphincters of the bladder and rectum, and finally in the nerves and brain, deſtroying in the laſt, the exerciſe of all the faculties of the mind.

FEW perſons appear to die of old age. Some one of the diſeaſes which have been mentioned, generally cuts the laſt thread of life.

THE END.

The READER *is requeſted to correct the following* ERRORS.

Page 2, line 2 from the bottom of the page, for *ſcience* read *conſcience*,
P. 6, l. 14 from the top of the page, for *faculties* read *qualities*.
P. 39, l. 2 from the bottom, for (*it is true*) read *virtue*, without a parentheſis; and for *ſciences* read *ſcience*.
P. 48, l. 11 from the top of the page, for *memoirs* read *memories*.
P. 63, l. 5 from the bottom, for *offifications* for *offifications*.
P. 66, l. 16—17 from the top, ſtrike out *in itſelf*.
P. 91, l. 7 from the top, for *ears* read *ear*.
P. 100 l. 6 from the top, for *kind* read *kinds*.
P. 133, l. 3 from the bottom, for *ſhort* read *ſmall*.
P. 134, l. 1 from the bottom, for *it* read *them*.
P. 177, l. 7, from the bottom for *Dr. Haller* read *Dr. Holler*.
P. 178, l. 6 from the top, for *on* read *in*.
P. 207, l. 1 from the top, for *caſes* read *ceaſes*, and in l. 7 from the bottom, for *looked* read *locked*.
P. 210, l. 6 from the top, for *neero* read *negro*.
P. 215, l. 15 from the top, after *phenomena* read *to them*.
P. 222, l. 9--10 from the top, for *pupil was* read *pupils were*.
P. 255 l. 9 from the top, after *cynanche* read *trachealis*,
P. 304, l. 1 from the top, after *life* read *and*,